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# BUSINESS FORECASTING

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TO THE MEMORY OF  
LIEUTENANT ORLANDO BURNUM COLLINS, JR.  
COMPANY L, 309TH INFANTRY, U. S. A.  
KILLED IN ACTION  
ST. JUVIN, ARGONNE FOREST  
OCTOBER 16, 1918



## INTRODUCTION

1923  
"THE end and aim of all science," stated Professor Jacques Loeb, "is the prediction and control of phenomena." The uncertainty which attends the outcome of business transactions offers a wide field for scientific research. It is indeed surprising to note how little science has done toward reducing the element of risk in commerce in comparison with achievements in the search for the unknown in geography, astronomy, medicine, and other fields. The age-old belief that business affairs were unworthy of study has too long blocked commercial progress.

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The future will always contain a large degree of uncertainty but the major changes in business conditions can be foreseen if basic economic laws are known. The most harmful effects of changing conditions are due to ignorance of these laws. "The forces that primarily cause the alternation of boom and depression," stated Professor M. T. Copeland recently, "can be regulated once they are understood. The severity of these ups and downs is due in large measure to the lack of adequate foresight, lack of general appreciation of the factors that influence the course of business prosperity, and failure to adopt corrective policies in season." Scientific research into the underlying causes of changes in business conditions has only just begun.

Sather  
"Stabilization of business and the avoidance of recurring depressions and crises," declared the Economic Advisory Committee of the National Conference on Unemployment held recently at Washington, "are in no small measure dependent upon a more complete knowledge of the factors affecting the business situation."

To the business man, the importance of being at all times acquainted with current conditions, outside as well as within his particular field, can scarcely be overestimated. Future policies cannot be wisely decided unless future economic probabilities are carefully analyzed, and such analysis is impossible without adequate statistics of existing conditions.

To the theoretical economist, the importance of knowing beforehand the relative strength of demand and supply has long been recognized. Indeed the economists have pointed out that the maladjustment between demand and supply has been

one of the chief sources of business profits. And since profits flowing from this source have usually been accidental they have been given the name of "conjunctural profits" to distinguish them from the so-called "pure profits," which arise from differences in efficiency among competitors.

Recent commercial history has served to emphasize the influence of conjunctural profits. From statistics of American industrial earnings during the years 1916 to 1919 compiled by Professor David Friday, the following table has been obtained.

| Type                   | Number | 1919      |       | 1918      |       | 1917      |       | 1916      |       |
|------------------------|--------|-----------|-------|-----------|-------|-----------|-------|-----------|-------|
|                        |        | (000,000) | Index | (000,000) | Index | (000,000) | Index | (000,000) | Index |
| Textiles . . . .       | 12     | \$45      | 265   | \$32      | 188   | \$25      | 147   | \$17      | 100   |
| Rubber . . . .         | 9      | 79        | 203   | 66        | 169   | 55        | 141   | 39        | 100   |
| Iron and steel         | 18     | 197       | 45    | 553       | 125   | 711       | 161   | 442       | 100   |
| Copper . . . .         | 26     | 42        | 15    | 130       | 45    | 210       | 73    | 286       | 100   |
| All industries . . . . | 259    | \$1,371   | 83    | \$1,819   | 110   | \$2,052   | 124   | \$1,652   | 100   |

The surprising lack of uniformity in the trend of industrial earnings during the specified years emphasizes the fact that under our present organization external conditions exert a more potent influence over company profits than do internal conditions. For 259 companies, net earnings in 1919 were 83 per cent of net earnings in 1916. But profits of textile and rubber companies were respectively 165 and 103 per cent greater in 1919 than in 1916, whereas earnings of iron and copper companies were respectively 55 and 85 per cent less. The wide variance is due not to differences in technical or managerial skill in the several industries, but to changes in the relative demand and supply of the products manufactured.

If the man in business is to realize the larger rewards which commerce offers, it is imperative that he have a broad knowledge of current economic developments. The gains which come from ability to foresee the trend of general conditions—conjunctural profits—far exceed the margin of pure profits which competition holds within narrow limits. To enable the business man, as well as the student of commercial affairs, to secure a working knowledge of the fundamental factors which influence changing business conditions, and to utilize this knowledge to foresee future developments—to the end that

profits may be enhanced and losses avoided—is the purpose of this book.

\* \* \* \* \*

In the compilation of the present volume, many sources of information were utilized, and in each instance an endeavor has been made to show proper credit. The author acknowledges his indebtedness for this assistance without which the work would be indeed incomplete. Special acknowledgment is due Mr. Arthur Hunter, F.F.A., F.A.S., Ex-President of the Actuarial Society of America, for life insurance statistics; Mr. James H. Scarr, meteorologist in charge of the United States Weather Bureau office in New York City, for weather reporting statistics; Mr. Nat C. Murray, Chief of the Bureau of Crop Estimates, for crop reporting statistics; the Committee on Economic Research of Harvard University for the use of the charts which show the trend of pig iron production corrected for secular trend and seasonal variation; Mr. Raymond E. Bagley and Mr. Arthur M. Shackleton for the preparation of the charts in the present volume; and Miss Lillian Doris for assistance in indexing and proofreading. To Professor Charles W. Gerstenberg of New York University, at whose suggestion the present volume was written and who has rendered immeasurable assistance in its preparation, is especially due the sincere appreciation of the author.

DAVID F. JORDAN.

New York University  
October, 1921





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PART I  
THE RELATION OF FORECASTING  
TO BUSINESS



## CHAPTER I

### PRACTICAL FORECASTING

**Foresight in business.**—Business prosperity depends primarily upon the ability of individuals to anticipate the future. An accurate appreciation of the developments which are likely to transpire in the ensuing months places a business man in a strategic position in the determination of the current policy of his establishment. If the probable course of prices is upward, he will purchase freely at the moment, to cover not alone his current requirements, but future needs as well, and will profit accordingly if his judgment has been correct. If the converse is true, and prices seem destined to lower, he will largely restrict his purchases in the existing market to take advantage of the probable decline later.<sup>1</sup>

Men who have been able to foresee developments most clearly have long been the leaders in world affairs. Napoleon's ability to anticipate the plans of his opponents was the chief factor to which his military achievements may be attributed. James J. Hill, the "Empire Builder," lived to see his prophecies fulfilled in the development of our Western States, as did Cecil Rhodes in South Africa. The success which Charles M. Schwab has had in the progress of the Bethlehem Steel Corporation is founded upon the same basis of intelligent foresight that gives John Brown more than a competence in conducting a general store at Latham's Corners.

While he is at work, the business man lives in the future. It must always be so. To-day's commerce is in anticipation of to-morrow's requirements. The wheat which is planted

<sup>1</sup> One of the leading cotton-goods houses of New York City was carrying a large stock of a certain make in January of 1920. The current price was about 22 cents a yard. The house said "24 or 18" meaning that it would hold out for 24 cents, appreciating that such policy involved a risk of loss should the price decline meanwhile, but placing the limitation to which the price might drop at 18 cents. The price dropped so rapidly immediately thereafter that the firm experienced considerable difficulty in finding purchasers at 8 cents a yard. The loss to the house amounted to many thousands of dollars.

in the fall anticipates hunger that is twelve months distant. Locomotives and freight cars are manufactured for traffic which may prove quite different from the estimated volume. That the Tuesday Afternoon Sewing Circle might close with tea, a thousand business men, half the world around, have been obliged to live in the future. The tea must be planted, cared for, and picked; then dried and packed in storehouses; transported over land and sea; ere it can reach the cup of the gentlewoman, ultimately, perhaps to form the basis of a manner of prophesy quite without the domain of this volume.

Men, therefore, succeed in business in direct proportion to their ability to forecast the future. The law of gravitation is not more certain. And this is submitted without the qualification of "other things being equal" as the inequality of environing circumstances will quickly disappear with the advent of very few false judgments.

Possibility of accurate forecasting.—General agreement exists that the man in business who is able to foresee developments has a decided advantage over less fortunate rivals. But a wide variance of opinion exists as to the limit to which the future may be predetermined. The world at large is disposed to consider the future as an impenetrable mystery, quite beyond the power of ordinary humans to foretell. Yet even the most superficial examination of the achievements of men in science and in commerce is sufficient to indicate that coming events may be predicted with accuracy.

The discovery of the planet Neptune was predicted by Leverrier in France and Adams in England as a result of pure mathematical calculations—one of the greatest accomplishments of the human intellect; in fact, so certain was the prediction that astronomers date the discovery from the time of the forecast. Halley predicted that the comet which bears his name would return in 1758, and although he knew he could not live to observe the verification of his foresight, he stated that he was content that impartial posterity would deal with him fairly. The amazing accuracy with which eclipses are foretold, and tide effects are predetermined, bear witness to the possibility of successful forecasting.

But the reader may register objection. Astronomy is such an exact science, and economics so inexact, that the analogy may not be well taken. But there are other fields in which forecasting must constantly be employed, such as life insurance,

weather reporting, crop reporting, census work, and the preparation of Governmental budgets. The purpose of the remainder of this chapter will be to examine the methods employed and to verify the accomplishments, in order to ascertain the degree of accuracy with which the future has been foretold in each of these fields.

**Mathematics of probabilities.**—A consideration of the mathematical theory of probabilities is of interest at this point. The theory of probabilities has its foundation in the law of causality which may be stated broadly as follows:

*Everything that happens, and everything that exists, necessarily happens or exists as the consequence of a previous state of things.*<sup>2</sup>

"This law cannot be proven. It must be taken, *a priori*, as an axiom; but once accepted as a truth it does away with the belief of a capricious ruling power, and even if the strongest disbeliever of the law may deny its truth in theory he invariably applies it in practice during his daily occupation in life."<sup>3</sup>

The law of causality is the basis of all intelligent forecasting. The practical business man, unlike Macbeth, has as little faith in seers who gaze into crystal globes as he has in the *ouija* board. What has happened to-day is the result of the events of yesterday and the days before; what will happen to-morrow will be the effect of causes presently operating. The problem of successful forecasting resolves itself therefore into the apparently less difficult task of properly appraising existing forces.<sup>4</sup>

The mathematics of probabilities offers but limited assistance to the predetermination of economic developments, however. Its domain includes only those cases where all possible happenings are known in advance, and where no particular happening will occur in preference to any other. It is a study of pure chance, and originated with the problems of gambling.

<sup>2</sup> "The Mathematical Theory of Probabilities," Arne Fisher, p. 2.

<sup>3</sup> *Idem*.

<sup>4</sup> "Consider how all events are interconnected. When we see the lightning, we listen for the thunder; when we hear the wind, we look for the waves on the sea; in the chill autumn, the leaves fall. Everywhere order reigns, so that when some circumstances have been noted we can foresee that others will also be present."—"An Introduction to Mathematics," A. N. Whitehead, p. 11.

In economics, its most important function is its service in the field of insurance. In other branches of industry, the application of the theory is attendant with considerable risk.<sup>5</sup>

In business, conditions are not opportune for a general application of the theory of mathematical probability. Human intellect has not thus far developed the capacity simultaneously to comprehend and properly to coordinate all the possible happenings in the economic activity of the world, even were those events "equally likely" to occur, a hypothesis contrary to established belief.

**Astronomical predictions.**—So great is public confidence that the predictions of the astronomers (as sharply distinguished from the astrologers)<sup>6</sup> will be verified that they are accepted with the same assurance that one feels toward sunrise on the morrow. The startling accuracy with which the astronomers predict eclipses, comets, and tides, is based upon the mathematical application of Newton's law of gravitation, which is a specific illustration of the law of causality. The astronomers measure the causes, and their accuracy in predicting the effect reflects the completeness with which they have taken into consideration existing forces. But even the astronomers err at times. Halley's Comet reached perihelion on April 20, 1910, differing by 2.7 days from the predictions. The percentage of error was less than 1-100 of 1 per cent., which was ascribed to the existence of forces which are not pure gravitation, and which, therefore, could not be measured.

The prediction of tidal movements is fully as remarkable as that of eclipses and comets. The movement is fairly uniform in some parts of the world, but in other regions the irregularity is marked even from day to day. The method employed in predetermining the Indian tides is of especial interest:

Along the coasts of the British Isles the tides are somewhat exceptional, in that the two tides each day are approximately of the same height. In consequence the tides are not very difficult to predict with fair accuracy by the use of rather rough and ready

<sup>5</sup> "The theory has been applied freely, and in many cases, rashly, too little attention having been paid to the fact that its applications really lie in the domain of those events whose occurrences may properly be compared to the drawings of balls from a bag."—"The Americana," vol. 22, p. 624.

<sup>6</sup> Astronomy is a study of the celestial bodies, independent of occurrences on the earth; astrology endeavors to associate occurrences on the earth with the position of the stars. Astrology is a delusion, not a science.



methods. In other parts of the world—India, for example—the two successive tides are very unequal, and they vary apparently very irregularly. Far more scientific procedure is then required, to predict the tides with the accuracy demanded by navigators in the Eastern seas. First, the tides, for a series of years, must be observed at various ports. Then the observed tidal curve must be analysed into its separate components by the method known as harmonic analysis. When that is done, the tides for future years can be predicted by the beautiful machine, the property of the Government of India, which used to stand in the Museum at South Kensington, and is now in the National Physical Laboratory at Bushby House. Every year a series of pulley wheels in this machine are set to execute the oscillations prescribed for them by the results of the analysis. A cord passes over the entire series and carries a pen at the end. The machine is set in motion, and the pen, actuated by the combined motion of all the pulleys, draws in a few hours the predicted curves for the year, one after the other, for the principal Indian ports.<sup>7</sup>

That forecasting has developed into a science in certain fields whereby it is actually accomplished by machinery, will prove a revelation to business men who believe the future is “with the gods alone.”

**Life insurance forecasting.**—The ability of life insurance companies to predetermine from year to year the amounts which they will be called upon to pay in death claims has long been a subject for favorable comment in commercial circles. The solvency of the institutions, as well as the determination of the amount of the premium charge, depends upon an accurate estimate of the obligations which arise from month to month. The fact that the amount of these obligations depends directly upon the apparently uncertain life tenure of the policyholders, would seem to make the problem of the insurance companies infinitely more difficult than that of the ordinary commercial enterprises whose obligations appear to have a greater element of definitiveness. An inquiry into the method employed by the life insurance companies in anticipating their obligations, and the extent to which they have been successful, should prove of interest.

Practically all of the United States life insurance companies estimate their anticipated death claims from the American Experience Table of Mortality which is shown in somewhat abridged form in Table 1. This table was compiled about

<sup>7</sup> From “Astronomy,” by Arthur R. Hinks, p. 59.

TABLE 1.—AMERICAN EXPERIENCE TABLE OF MORTALITY\*

|     |                  |                 | Yearly prob-                    |     |                  |                 | Yearly prob-                    |
|-----|------------------|-----------------|---------------------------------|-----|------------------|-----------------|---------------------------------|
| Age | Number<br>Living | Number<br>Dying | ability of<br>dying<br>Per cent | Age | Number<br>Living | Number<br>Dying | ability of<br>dying<br>Per cent |
| 10  | 100,000          | 749             | 00.75                           | 53  | 66,797           | 1,091           | 1.63                            |
| 11  | 99,251           | 746             | 00.75                           | 54  | 65,706           | 1,143           | 1.73                            |
| 12  | 98,505           | 743             | 00.75                           | 55  | 64,563           | 1,199           | 1.85                            |
| 13  | 97,762           | 740             | 00.76                           | 56  | 63,364           | 1,260           | 1.98                            |
| 14  | 97,022           | 737             | 00.76                           | 57  | 62,104           | 1,325           | 2.13                            |
| 15  | 96,285           | 735             | 00.76                           | 58  | 60,779           | 1,394           | 2.29                            |
| 16  | 95,550           | 732             | 00.77                           | 59  | 59,385           | 1,468           | 2.47                            |
| 17  | 94,818           | 729             | 00.77                           | 60  | 57,917           | 1,546           | 2.66                            |
| 18  | 94,089           | 727             | 00.77                           | 61  | 56,371           | 1,628           | 2.88                            |
| 19  | 93,362           | 725             | 00.78                           | 62  | 54,743           | 1,713           | 3.12                            |
| 20  | 92,637           | 723             | 00.78                           | 63  | 53,030           | 1,800           | 3.39                            |
| 21  | 91,914           | 722             | 00.79                           | 64  | 51,230           | 1,889           | 3.68                            |
| 22  | 91,192           | 721             | 00.79                           | 65  | 49,341           | 1,980           | 4.01                            |
| 23  | 90,471           | 720             | 00.80                           | 66  | 47,361           | 2,070           | 4.37                            |
| 24  | 89,751           | 719             | 00.80                           | 67  | 45,291           | 2,158           | 4.76                            |
| 25  | 89,032           | 718             | 00.81                           | 68  | 43,133           | 2,243           | 5.20                            |
| 26  | 88,314           | 718             | 00.82                           | 69  | 40,890           | 2,321           | 5.67                            |
| 27  | 87,596           | 718             | 00.83                           | 70  | 38,569           | 2,391           | 6.19                            |
| 28  | 86,878           | 718             | 00.83                           | 71  | 36,178           | 2,448           | 6.76                            |
| 29  | 86,160           | 719             | 00.84                           | 72  | 33,730           | 2,487           | 7.37                            |
| 30  | 85,441           | 720             | 00.85                           | 73  | 31,243           | 2,505           | 8.01                            |
| 31  | 84,721           | 721             | 00.86                           | 74  | 28,738           | 2,501           | 8.70                            |
| 32  | 84,000           | 723             | 00.87                           | 75  | 26,237           | 2,476           | 9.43                            |
| 33  | 83,277           | 726             | 00.88                           | 76  | 23,761           | 2,431           | 10.23                           |
| 34  | 82,551           | 729             | 00.88                           | 77  | 21,330           | 2,369           | 11.10                           |
| 35  | 81,822           | 732             | 00.89                           | 78  | 18,961           | 2,291           | 12.08                           |
| 36  | 81,090           | 737             | 00.90                           | 79  | 16,670           | 2,196           | 13.17                           |
| 37  | 80,353           | 742             | 00.92                           | 80  | 14,474           | 2,091           | 14.44                           |
| 38  | 79,611           | 749             | 00.94                           | 81  | 12,383           | 1,964           | 15.86                           |
| 39  | 78,862           | 756             | 00.95                           | 82  | 10,419           | 1,816           | 17.42                           |
| 40  | 78,106           | 765             | 00.97                           | 83  | 8,603            | 1,648           | 19.15                           |
| 41  | 77,341           | 774             | 01.00                           | 84  | 6,955            | 1,470           | 21.13                           |
| 42  | 76,567           | 785             | 01.02                           | 85  | 5,485            | 1,292           | 23.55                           |
| 43  | 75,782           | 797             | 01.05                           | 86  | 4,193            | 1,114           | 26.76                           |
| 44  | 74,985           | 812             | 01.08                           | 87  | 3,079            | 933             | 30.30                           |
| 45  | 74,173           | 828             | 01.11                           | 88  | 2,146            | 744             | 34.66                           |
| 46  | 73,345           | 848             | 01.15                           | 89  | 1,402            | 555             | 39.58                           |
| 47  | 72,497           | 870             | 01.20                           | 90  | 847              | 385             | 45.45                           |
| 48  | 71,627           | 896             | 01.25                           | 91  | 462              | 246             | 53.24                           |
| 49  | 70,731           | 927             | 01.31                           | 92  | 216              | 137             | 63.42                           |
| 50  | 69,804           | 962             | 01.37                           | 93  | 79               | 58              | 73.41                           |
| 51  | 68,842           | 1,001           | 01.45                           | 94  | 21               | 18              | 85.71                           |
| 52  | 67,841           | 1,044           | 01.53                           | 95  | 3                | 3               | 100.00                          |

\* Compiled from "Practical Lessons in Actuarial Science," vol. II, p. 7.



1870 and is supposed to represent the actual experience of one of the larger American companies during preceding years.<sup>8</sup>

An investigation conducted by The Actuarial Society of America in 1918 reviewed the actual experience of the principal American life insurance companies during the years 1900 to 1915 inclusive, based on policies issued from 1843 to 1914 inclusive. The result is shown in Table 2.

TABLE 2.—VERIFICATION OF THE AMERICAN EXPERIENCE TABLE OF MORTALITY BY THE PRINCIPAL UNITED STATES LIFE INSURANCE COMPANIES, 1900-1915\*

| <i>Attained<br/>age</i> | <i>Ratio of actual deaths<br/>to expected deaths<br/>Per cent</i> |
|-------------------------|-------------------------------------------------------------------|
| 20 .....                | 51                                                                |
| 25 .....                | 53                                                                |
| 30 .....                | 51                                                                |
| 35 .....                | 55                                                                |
| 40 .....                | 59                                                                |
| 45 .....                | 69                                                                |
| 50 .....                | 86                                                                |
| 55 .....                | 95                                                                |
| 60 .....                | 99                                                                |
| 65 .....                | 103                                                               |
| 70 .....                | 100                                                               |
| 75 .....                | 96                                                                |
| 80 .....                | 92                                                                |
| Average .....           | 78                                                                |

\* After eliminating policies in force five years or less.—From "American-Canadian Mortality Investigation, 1918."

The result is somewhat surprising inasmuch as the insurance companies apparently do not gain the degree of accuracy with which they are usually credited. The experience of the companies during the nineteenth century should have enabled them to prepare estimates for the first fifteen years of the twentieth century which should be closer than 78 per cent accurate. In fairness to the companies, it must be stated that they appreciate that the American Experience Table is an overestimate, and that they actually anticipate only between 80 to 85 per cent of the expected deaths will occur. For obvious reasons, they are

<sup>8</sup> The table was compiled in 1868 by Sheppard Homans of the Mutual Life of New York. *CF. Transactions of the Actuarial Society of America*, Vol. I, pp. 32-34.

willing to continue to use the American Experience Table<sup>9</sup> although an "ultimate table" prepared by the actuaries gains an accuracy of between 98.7 and 100.1 per cent.<sup>10</sup>

The methods employed by the life insurance companies are purely empirical. Apparently no attempt is made to establish trends from year to year or from generation to generation in the average duration of life. The conditions which accomplished a certain result in the decade from 1880 to 1890 are accepted as holding true in the period from 1920 to 1930. That this will prove correct is by no means certain; changing living standards, better housing conditions, improved hygiene, and medical advancement ought to bring some measurable increase in the average length of human life.

Weather forecasts.—"The wind bloweth where it listeth," runs the old adage. Yet few Americans appreciate that the winds in the United States blow where they "listeth" only 3 per cent of the time, while the other 97 per cent of the time they blow in the direction previously foretold by the Weather Bureau. Table 3 shows in detail the verification of the weather forecasts for the years 1915 to 1919 inclusive. The combined average of weather and temperature predictions for all the districts is 88.4 per cent accurate. This covers "affirmative" predictions<sup>11</sup> only and is actually equivalent to 97 per cent accuracy on all predictions made during the period.

As in life insurance, weather forecasting is still in the empirical stage. The observations of the past are used solely in predetermining the future. The Weather Bureau is only beginning to ascertain if there is a law of changing weather to determine if weather passes through cycles of definite periods and amplitudes. Present predictions are based upon current infor-

<sup>9</sup> Premium rates are based upon the American Experience Table. The overcharge is returned to the policyholders as "dividends"—an obvious misnomer.

<sup>10</sup> "As additional proof, it may be mentioned that the ratio of actual to expected deaths from the eleventh to the fifteenth insurance years inclusive for ages of entry 15 to 34 inclusive was 98.7 per cent, while from the sixth to the tenth insurance years it was 100.1 per cent—the expected deaths being calculated by the ultimate table."—"American-Canadian Mortality Investigation, 1918."

<sup>11</sup> An "affirmative" prediction is a prediction of a change in the weather. Since during the year the weather does not change on successive days 70 per cent of the time, an individual making a daily prediction that the weather for the ensuing day would be unchanged from the current day would gain an average of about 70.0 per cent for the year. The average of 88.4 per cent gained by the Bureau really represents 88.4 per cent of the normal margin of 30 per cent which comprises the domain of "affirmative" predictions. A "negative" prediction is a forecast of unchanged weather.

TABLE 3.—VERIFICATION OF A. M. 36-HOUR WEATHER AND TEMPERATURE FORECASTS OF THE  
U. S. WEATHER BUREAU, 1915-1919\*

| <i>District</i>     | 1915        |             | 1916        |             | 1917        |             | 1918        |             | 1919        |             | Average     |              |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|--------------|
|                     | <i>Wea.</i> | <i>Tem.</i> | <i>Wea.</i> | <i>Tem.</i> | <i>Wea.</i> | <i>Tem.</i> | <i>Wea.</i> | <i>Tem.</i> | <i>Wea.</i> | <i>Tem.</i> | <i>Wea.</i> | <i>Comb.</i> |
| Washington .....    | 85.9        | 92.6        | 85.9        | 91.5        | 85.6        | 91.5        | 83.3        | 89.3        | 84.4        | 91.0        | 85.0        | 88.1         |
| Chicago .....       | 85.3        | 87.5        | 85.7        | 87.2        | 88.1        | 87.3        | 85.7        | 86.8        | 86.9        | 88.2        | 86.3        | 86.9         |
| New Orleans .....   | 87.1        | 91.9        | 89.9        | 90.8        | 90.0        | 90.7        | 88.8        | 90.5        | 86.1        | 91.8        | 88.4        | 89.8         |
| Denver .....        | 88.5        | 89.2        | 89.0        | 89.1        | 91.0        | 89.5        | 88.3        | 89.3        | 88.6        | 89.3        | 89.1        | 89.2         |
| San Francisco ..... | 87.8        | 92.1        | 89.6        | 91.0        | 90.0        | 91.2        | 87.9        | 90.7        | 88.3        | 90.5        | 88.7        | 89.9         |
| Average .....       | 86.3        | 91.0        | 87.0        | 90.2        | 87.6        | 90.3        | 85.4        | 89.0        | 86.0        | 90.3        | 86.5        | 88.4         |

\* From "U. S. Dept. of Agriculture, Report of the Chief of the Weather Bureau," 1919-20.

mation with no attempt to correlate the forecasts with the influence of any existing trend.<sup>12</sup> But at least one independent investigation<sup>13</sup> indicates a distinct probability that cycles of rainfall exist.<sup>14</sup> The empirical nature of the Weather Bureau forecasts is further illustrated by the inability of the Bureau to predict with accuracy more than two or three days in advance.

**Census forecasting.**—Although the Federal Census of the United States is taken on a decennial basis, the Department of Commerce estimates each year the population not only for the entire country but for the various subdivisions as well. The method employed is to take the average annual increase as indicated by the ten year period between the two preceding enumerations on a percentage basis. For instance, the Federal Census of 1900 showed a gain of 20.7 per cent over the 1890 enumeration; it was therefore assumed that the 1910 census would show an increase of the same percentage over that of 1900. This assumption proved surprisingly accurate as the actual increase was exactly 21.0 per cent. If the same reasoning were applied in predetermining the 1920 census, the margin of error would have been considerable as the increase in 1920 was but 14.9 per cent. The discrepancy, however, is entirely attributable to the World War.

This method of estimating population increases is open to many objections. As is indicated by Table 4, the procedure would have yielded satisfactory results in the decades preceding the Civil War. Since 1860, however, there has been considerable irregularity in the increases on a percentage basis. The average decennial increase for the hundred years terminating in 1890 was 32.05 per cent; for the hundred years ending in 1900, 30.69 per cent; ending in 1910, 29.15 per cent;

<sup>12</sup> The method employed in forecasting weather and temperature is a further illustration of the law of causality. Air rushing from cool regions to warmer adjacent regions causes the wind. As the cool air meets the warm atmosphere, the latter loses its capacity to hold vapor, and the condensation, i.e., rainfall, results.

<sup>13</sup> "Economic Cycles: Their Law and Cause," by Henry Ludwell Moore, chap. II.

<sup>14</sup> Those who have been inclined to have but little faith in the value of the weather forecasts have doubtless been surprised to learn of the accuracy indicated in Table 3. "Forecasts cannot be made with mathematical accuracy, for they are practically all empirical deductions but they do have such a high degree of verification that no one whose life or property is affected by the coming of severe storms would to-day consider for a moment doing without the benefit to be derived from them."—"The Americana," vol. 29, p. 131.

ending in 1920, 27.33 per cent. This clearly reflects a downward trend in the rate of increase, an important factor which should be taken into consideration in estimating future increases.

TABLE 4.—RATE OF GROWTH OF POPULATION OF THE UNITED STATES, 1800-1920

| <i>Year</i> | <i>Percentage of increase<br/>over previous census</i> |
|-------------|--------------------------------------------------------|
| 1920 .....  | 14.9                                                   |
| 1910 .....  | 21.0                                                   |
| 1900 .....  | 20.7                                                   |
| 1890 .....  | 25.5                                                   |
| 1880 .....  | 22.6                                                   |
| 1870 .....  | 30.1                                                   |
| 1860 .....  | 35.6                                                   |
| 1850 .....  | 35.9                                                   |
| 1840 .....  | 32.7                                                   |
| 1830 .....  | 33.5                                                   |
| 1820 .....  | 33.1                                                   |
| 1810 .....  | 36.4                                                   |
| 1800 .....  | 35.1                                                   |

The population of the United States in 1920 was 105,708,771 according to the revised figures. If the trend on the basis of the periods of one hundred years each which ended in 1890, 1900, 1910, and 1920 respectively, should continue, the percentages of increase at the next three Federal censuses should be approximately as follows: 1930, 18.1 per cent; 1940, 17.3 per cent; and 1950, 16.9 per cent. If this were to hold good the population in 1930 would be about 125,000,000; in 1940 about 145,000,000; and in 1950 about 170,000,000.

Experience, however, has shown that it is extremely unlikely that the actual increase will be so great. In countries such as France and Belgium where the natural resources have been utilized to a maximum extent, the population shows a high degree of stability in contrast to the continual increases in the newer lands of America. If the European experience—and for that matter, the Oriental as well—is to be repeated in this country, the rate of increase will decline sharply before the end of the present century. A recent forecast of the prospective population of the United States on the basis of the European and Oriental experience estimated the population in 1930 would be about 120,000,000; in 1940 about 135,000,000; in

TABLE 5.—POPULATION OF THE UNITED STATES, ACTUAL AND PROSPECTIVE\*

|            |             |
|------------|-------------|
| 1790 ..... | 3,929,214   |
| 1800 ..... | 5,308,483   |
| 1810 ..... | 7,239,881   |
| 1820 ..... | 9,638,453   |
| 1830 ..... | 12,866,020  |
| 1840 ..... | 17,069,453  |
| 1850 ..... | 23,191,876  |
| 1860 ..... | 31,443,321  |
| 1870 ..... | 38,558,371  |
| 1880 ..... | 50,155,783  |
| 1890 ..... | 62,947,714  |
| 1900 ..... | 75,994,575  |
| 1910 ..... | 91,972,266  |
| 1920 ..... | 105,708,771 |
| 1930 ..... | 120,000,000 |
| 1940 ..... | 135,000,000 |
| 1950 ..... | 148,000,000 |
| 1960 ..... | 159,000,000 |
| 2000 ..... | 183,000,000 |
| 2080 ..... | 198,000,000 |

\* Figures 1790-1910, "Statistical Abstract of the United States," p. 31, 1920. 1920, *Commercial and Financial Chronicle*, vol. 112, No. 2900, p. 331. 1930-1950, *Harper's Magazine*, vol. CXLII, No. 852, p. 705.

1950 about 148,000,000; in 2000 about 183,000,000; and a maximum population of 198,000,000 would be reached 2080.<sup>15</sup>

National budget estimates.—In the preparation of national budgets, it is necessary to forecast both revenues and expenditures for the period in question. The predetermination of revenues can be accomplished far more scientifically than that of expenditures, owing to the uncertainty of legislative appropriations after the compilation of the budget. None of the large nations following the budgetary system has achieved a greater degree of accuracy in this respect than has England. For the fiscal year which ended March 31, 1921 the estimated revenues were £1,418,300,000 and the actual receipts were £1,426,000,000, or less than 6-10ths of 1 per cent from the anticipated figure. As is shown in Table 6 the average accuracy for the ten year period from 1911 to 1921 was 93.76 per cent, despite the fact that this period included the entire war

<sup>15</sup> "Forecasting the Growth of Nations," Raymond Pearl and F. C. Kelly, in *Harper's Magazine*, vol. CXLII, No. 852, p. 704.



duration when revenues were constantly increasing. The average accuracy for the pre-war years 1911-12, 1912-13, 1913-14, and for the first post-war year 1920-21, was 98.8 per cent.

Although the United States was not operating on the budget system during the years 1917 to 1920 inclusive, the Secretary of the Treasury in his annual report for each year estimated the anticipated revenues during the succeeding fiscal year. Inasmuch as it is the custom for Congress to have the Treasury Department estimate the revenue from proposed tax laws before voting upon the measures, it is interesting to note the degree of accuracy gained by the Department in its predictions. The verification of the preliminary estimates of the Secretary of the Treasury for the fiscal years 1917-18, 1918-19, and 1919-20 is shown in Table 7. The average accuracy for the three fiscal years on customs revenues was 87.3 per cent; on income taxes, 76.5 per cent; on miscellaneous taxes, 86.7 per cent; and on total taxes 82.1; on miscellaneous revenues 87.9 per cent; and on total revenues, 83.6 per cent.

TABLE 6.—VERIFICATION OF THE ESTIMATES OF REVENUES UNDER THE NATIONAL BUDGET OF THE UNITED KINGDOM, 1911-1921\*  
(000 omitted)

| Year            | Estimated  | Actual     | Percentage of accuracy |
|-----------------|------------|------------|------------------------|
| 1920-1921 ..... | £1,418,300 | £1,426,000 | 99.4                   |
| 1919-1920 ..... | 1,201,100  | 1,339,571  | 88.5                   |
| 1918-1919 ..... | 842,050    | 889,020    | 94.6                   |
| 1917-1918 ..... | 638,600    | 707,234    | 89.2                   |
| 1916-1917 ..... | 509,000    | 573,429    | 87.4                   |
| 1915-1916 ..... | 305,000    | 336,766    | 89.8                   |
| 1914-1915 ..... | 211,296    | 226,694    | 92.9                   |
| 1913-1914 ..... | 195,825    | 198,242    | 98.5                   |
| 1912-1913 ..... | 187,189    | 188,802    | 99.5                   |
| 1911-1912 ..... | 181,621    | 185,090    | 97.8                   |

\* Compiled from *The Economist*, London.

Three methods are employed in predetermining revenues under National budget systems:<sup>16</sup>

1. The automatic (averaging) system. Under this method, the results of the year before the last year, the "penultimate" as it is called, are arbitrarily assumed to obtain for the coming year.

2. The system of (estimating) increases (and decreases).

3. The system of direct valuation (estimating *de novo* each year).

<sup>16</sup> From *The Budget*, René Stourm, p. 172.

TABLE No. 7.—VERIFICATION OF THE PRELIMINARY ESTIMATES OF THE SECRETARY OF THE TREASURY OF THE UNITED STATES, 1917-1920\*

| <i>Ordinary receipts</i> | (in millions of dollars) |               |                  |             |                  |                 |             |               |
|--------------------------|--------------------------|---------------|------------------|-------------|------------------|-----------------|-------------|---------------|
|                          | <i>1919-1920</i>         |               | <i>1918-1919</i> |             | <i>1917-1918</i> |                 |             |               |
|                          | <i>Est.</i>              | <i>Actual</i> | <i>Per cent</i>  | <i>Est.</i> | <i>Actual</i>    | <i>Per cent</i> | <i>Est.</i> | <i>Actual</i> |
| Customs .....            | \$275                    | \$323         | 82.3             | \$190       | \$183            | 96.5            | \$220       | \$183         |
| Income taxes .....       | 3,750                    | 3,957         | 94.5             | 5,000       | 2,600            | 52.0            | 2,427       | 2,839         |
| Misc. taxes .....        | 1,240                    | 1,442         | 83.7             | 1,100       | 1,239            | 87.3            | 973         | 857           |
| Total taxes .....        | 4,990                    | 5,399         | 92.1             | 6,100       | 3,840            | 63.0            | 3,400       | 3,696         |
| Misc. sources ....       | 835                      | 973           | 83.5             | 557         | 624              | 87.8            | 267         | 295           |
| Total .....              | \$6,100                  | \$6,696       | 90.3             | \$6,847     | \$4,647          | 67.9            | \$3,889     | \$4,174       |

\* Compiled from the annual reports of the Secretary of the Treasury.



The British method is really a combination of all three,<sup>17</sup> whereas the method employed by the Secretary of the Treasury in the United States is a system of direct valuation.

**Crop forecasting.**—The monthly reports of the Department of Agriculture may be regarded as incomplete forecasts. They state that the current condition of a certain crop indicates a definite yield per acre, *provided normal conditions obtain until the final harvest*. The department does not attempt to predetermine abnormal occurrences which may develop in the interim, such as unusual weather, abandoned acreage, insect ravage, and similar factors. For this reason, the crop reports<sup>18</sup> are not issued as definite forecasts of the ensuing harvest. The degree of accuracy has accordingly varied with the influence of the factors not taken into consideration. As the quantitative interpretation of the condition reports of the principal crops, except cotton, was not begun until 1911, the Department has exercised natural hesitancy, in view of its limited experience, in attempting a complete forecast which would take into consideration the effect of the factors not presently included. There is little doubt but that eventually the Department will offer complete forecasts. The removal of the obvious major obstacle, that of foretelling weather conditions, depends upon the Weather Bureau which thus far, as has been previously stated, has been unable to predict accurately more than a few days in advance.

The verification of the winter wheat forecasts for the years 1910 and 1920 inclusive is shown in Table 8. The first estimate is given in December of the preceding year, after the fall planting, and about eight months before the harvest.

<sup>17</sup> "In England, for example, the submitting of the budget to the House of Commons on the eve, and even more frequently on the morrow of the opening of the fiscal year, renders the automatic fiction quite useless. As the taxes have yielded a certain sum last year—which ended only eight days ago—they certainly will be able to yield either an equal sum or a smaller or a greater sum, according to the conditions which affect them at the given moment, or which may affect them within a short time. The probabilities are so real or so close that they are equivalent almost to accomplished facts. The Chancellor of the Exchequer sees rather than anticipates, and no one would think, therefore, about tying down his estimates by mechanical rules based on antiquated statistics."—*The Budget*, René Stourm, p. 183.

<sup>18</sup> "The forecasts are such figures that, based upon average conditions in the past years, there is an even chance or probability that the final yield will be either above or below the figure forecast."—"Government Crop Reports, Their Value, Scope and Preparation," U. S. Dept. of Agriculture, Bureau of Crop Estimates, Circular 17, Revised.

The second estimate is given in April, after the winter season, and about four months before harvest. The final estimate of condition is given in July, one month before production is estimated. The July estimate is usually very close to the actual result. For incomplete forecasts, the December estimates have had considerable accuracy. Naturally, the April estimates make a better showing.

TABLE 8.—VERIFICATION OF THE WINTER WHEAT FORECASTS OF THE DEPARTMENT OF AGRICULTURE

| <i>Year</i> | <i>December<br/>condition</i> | <i>April<br/>condition</i> | <i>July<br/>condition</i> |
|-------------|-------------------------------|----------------------------|---------------------------|
| 1920 .....  | 85.2                          | 75.6                       | 79.7                      |
| 1919 .....  | 98.5                          | 99.8                       | 89.0                      |
| 1918 .....  | 79.3                          | 78.6                       | 79.5                      |
| 1917 .....  | 85.7                          | 63.4                       | 75.9                      |
| 1916 .....  | 87.7                          | 78.3                       | 75.7                      |
| 1915 .....  | 88.3                          | 88.8                       | 84.4                      |
| 1914 .....  | 97.2                          | 95.6                       | 94.1                      |
| 1913 .....  | 93.2                          | 91.6                       | 81.6                      |
| 1912 .....  | 86.6                          | 80.6                       | 73.3                      |
| 1911 .....  | 82.5                          | 83.3                       | 76.8                      |
| 1910 .....  | 95.8                          | 80.8                       | 81.5                      |

**Summary.**—Men in business are constantly obliged to consider the future.<sup>19</sup> In fact, their prosperity is dependent chiefly upon their ability successfully to foresee economic developments. The practical business man may profess but little faith in the capacity of the human intellect to foretell the future, but consciously or not he is continually obliged to form his own estimates of what is likely to happen.<sup>20</sup> The future is by no means indeterminable. By careful analysis of concurrent events, and with due regard to the experience of former years, economic forecasting is now being successfully accomplished in many lines. This is evidenced by the verification of the predic-

<sup>19</sup> "People will endeavor to forecast the future and to make agreements according to their prophecy. Speculation of this kind by competent men is the self-adjustment of society to the probable. Its value is well known as a means of avoiding or mitigating catastrophies, equalizing prices and providing for periods of want."—Justice O. W. Holmes, U. S. Supreme Court, quoted by J. C. F. Merrill in "The Annals," vol. 38, No. 2, p. 75

<sup>20</sup> Lord Beaconsfield has defined a practical man as "one who practices the errors of his forefathers." The modern business man must be more than solely practical if he is to achieve definite success. "The Romans were a great race, but they were cursed with the sterility which waits upon practicality. They did not improve upon the knowledge of their forefathers. . . . They were not dreamers enough to arrive at new points of view, which could give a more fundamental control over the forces of nature."—"Introduction to Mathematics," A. N. Whitehead, p. 41.

tions of the life insurance companies, of the Weather Bureau, of the Crop Reporting Bureau, of the compilers of the national budgets, and in census work. That there is room for even greater accuracy in these fields is indicated by the fact that practically no attempt has been made to develop the forecasting beyond the empirical stage.<sup>21</sup>

The law of causality forms the basis of all intelligent forecasting. Since everything that happens necessarily occurs as the consequence of a previous state of things, the predetermination of economic developments is predicted upon adequate knowledge of existing conditions.<sup>22</sup> With the law of causality as a foundation, the present volume endeavors to analyze economic happenings and conditions from an *a priori* standpoint, in the belief that only in this manner business conditions may be intelligently and successfully predetermined.<sup>23</sup>

<sup>21</sup> "Risk and uncertainty and the possibility of shining success against great odds are to be found at our doorsteps. Our city marts have become our treasure islands, and captains of industry are as picturesquely daring as pirates of old. Business is today the vast unknown, the great battleground in which courage and leadership and imagination, the qualities which in the past sought their outlet in the struggle with nature, can measure their strength. We have but begun to exploit its possibilities and still but guess at its bounds. It has seas as uncharted as the oceans of fiction and affords opportunities as ready to yield fruit to ingenuity and decision as the island of a Crusoe. And it has the advantage of offering a multiplicity of surprises and a whirligig of fortunes that enable the romancer to indulge his fancy without running afoul of the sense of the multitude. Science and exploration have as yet set up no rules here, and chance takes a hand in the game. Thus practical men whose zest in adventure rejects the tale which fact has thrown out of joint with fancy can still read the romance of business in the belief that the dreams of literature may become the actualities of experience. Their sense of the plausible is satisfied at the same time that their love of excitement finds gratification. The thrill of the unknown has passed to the world of finance and industry and engineering."—Amy Loveman in *New York Evening Post*, July 2, 1921.

<sup>22</sup> "For, since business cycles result from process of cumulative change, the main factors in shaping to-morrow are the factors at work yesterday and to-day"—"Business Cycles," W. C. Mitchell, p. 588.

<sup>23</sup> Forecasting is not the true field of the economist; at least the entire burden of predetermination should not be his. The economist inherently reasons *a posteriori*, from effect to cause; the effects being known, his is the task of determining the cause. Empirically, he has become capable of reasoning *a priori*, from cause to effect. If the economist apprehends all the possible causes that may arise in the future, he can foretell the effect, but it should not be solely his task to acquire the necessary comprehension of existing forces as well as to determine their effect. That a greater degree of cooperation from the business world in the rendition of adequate information on current conditions is of prime importance in the development of economic forecasting, will become apparent in the succeeding chapters.

## CHAPTER II

### THE BUSINESS CYCLE

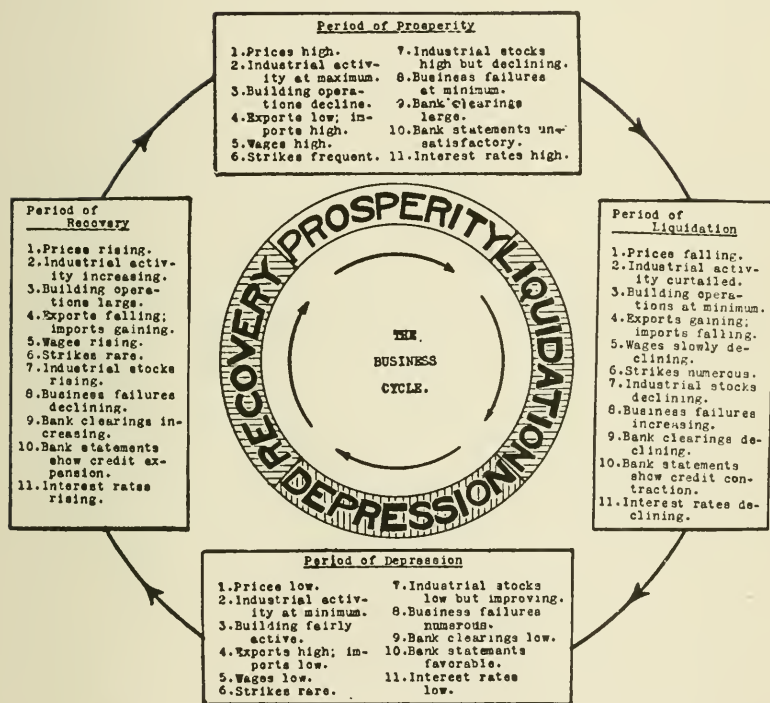
**The integral aspect of business.**—Numerous forces are constantly operating in the world of business. While the purpose of the present volume is to analyze these forces in order that intelligent opinion may be formulated as to their effect, before any attempt is made to consider them separately, the manner in which they function collectively must receive attention. Production statistics, for instance, are better interpreted when the part that productivity plays in changing business conditions is understood. As production changes, other forces change simultaneously. As a later section of the book illustrates the sequence of changes in each factor separately from the other factors, the present and succeeding chapter purpose to show the manner in which they operate collectively.

The economic forces which receive attention are arbitrarily divided into five groups: (1) conditions relating to production; (2) conditions relating to marketing; (3) conditions relating to labor; (4) conditions relating to corporate prosperity; and (5) conditions relating to finance. The first group includes agriculture, industry, and new construction. The second comprises prices, transportation, foreign trade and retail sales. The third includes employment, wages, controversies, and migration. The fourth comprises earnings, failures, new security issues, and exchange transactions. The fifth includes bank clearings, bank statements, interest rates, gold movements, and Government finance.

To gain uniform presentation, the characteristics of each stage of business are considered with relation to each group in the order named. This sequence is likewise maintained in Part II, which is largely a statistical amplification of the present and succeeding chapter and to which these two chapters serve as an introduction.

**The fluctuations of business.**—Business conditions are never static. Constantly the trend of commercial activity is undergoing change. At one time, the industrial enterprises of the

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country are rushed to meet what appears to be an almost insatiable demand; at another, industry marks time because the demand for its products seems to have vanished with the "snows of yesteryear."

Alternate periods of prosperity and depression—of commercial activity and dullness—are not of recent origin. Their re-occurrence has been noted for centuries<sup>1</sup> and the underlying causes have engaged the attention of leading economists—from Smith and Mill to Rodbertus, Sombart, Lescure, Aftalion, and others of even more recent fame—throughout the nineteenth and into the twentieth century.

Wide variance of opinion exists as to the cause of the fluctuations despite the attention which has been directed to it. Certain of the theories which have gained the most popularity will be referred to in the development of the subject, but first consideration must be given to the manner in which business conditions change.

**The stages of business.**—Commerce is continually in either one of two stages—a period of prosperity which connotes activity, or an era of depression which implies dullness—or in a period of transition between the two. A crisis usually marks the transition from the period of prosperity to that of depression, and in this manner enables the respective periods to be readily differentiated. Seldom can the line be drawn so sharply when a period of depression ends and one of prosperity begins, although the inception of the World War in 1914 definitely began the period of prosperity in the United States which continued until 1920.

The periods of transition between alternate stages of prosperity and depression are regarded apart from the conditions into which they lead, and the complete movement under which business conditions tend to return to a previous status is thus regarded as a cycle with four component divisions. These divisions are: (1) a period of depression, with commercial activity at its lowest ebb; (2) a period of recovery, with activity increasing; (3) a period of prosperity, with activity stimulated to a maximum; and (4) a period of relapse, with activity declining. Panics and crises are not regarded as separate periods, first, because the transition from the third to the fourth stage often transpires without their occurrence, and,

<sup>1</sup> Sir William Petty, in 1662, estimated the length of the business cycle to be seven years.

secondly, because they may be more accurately considered as the final stage of the prosperity period.<sup>2</sup>

**Characteristics of a period of depression.**—The depression stage usually has a longer duration than the other periods. In fact, one theory of the causes of business cycles has its foundation in the assumption that a condition of depression is the normal status of modern industry.<sup>3</sup> The confidence which prevailed during the preceding era of prosperity has given way to a feeling of pessimism. Caution in production is the rule of the day. The tendency on the part of one industry to curtail activity has a consequent similar effect upon allied fields, with the result that as the period lengthens, the situation becomes more pronounced, rather than contrariwise. Psychology plays an important part in the fluctuations of business. Optimists act quickly, pessimists move slowly. Hence, the tendency for periods of depression to be long continued in comparison with the other stages.

**Production during a period of depression.**—Total productivity materially declines during the depression stage, although not to the extent that might reasonably be expected.

Agricultural production is not seriously affected, due chiefly to the difficulty in regulation. Farmers cannot curtail operations so readily as other producers, as they must constantly commit themselves six to twelve months in advance. Moreover, there is a greater economic waste involved in the restriction of farm production owing to the inability of the producers to apply their equipment to other use. Agriculture, therefore,

<sup>2</sup> A line of differentiation may readily be drawn in the cases of panic, crisis, and depression. A panic is that state of business conditions when fear and apprehension that preceding conditions of activity and prosperity are about to be radically transformed, suddenly inculcate a spirit of extreme pessimism into the business world and cause transactions to be consummated without proper regard for reasonable values. A crisis is that state of business conditions when it becomes apparent that for one or more reasons commerce can not further be conducted in the same manner as obtained in the immediate past and that readjustment is imperative. The reason is usually the maladjustment of production or the exhaustion of credit availability. A depression is that state of business conditions when commercial activity is abnormally low. A panic is invariably of brief duration; a crisis is more protracted as it includes the final stages of the period of activity as well as the early stages of the period of depression; and a depression is ordinarily prolonged over several years. Cf "Crises and Depressions," T. E. Burton, page 6.

<sup>3</sup> "Theory of Business Enterprise," T. B. Veblen, chap. VII.



continues with a regularity that is quite independent of conditions of depression and prosperity.<sup>4</sup>

Industrial production, as distinguished from agricultural, is substantially restricted. The demand has declined because buyers are either unwilling or unable to purchase. Moreover, apprehension concerning the course of prices in the immediate future has a natural effect in causing producers to lessen the risk of loss from a further decline.

New construction tends to increase during a period of depression—in truth, it is one of the factors which mitigates the situation and assists in bringing about the period of recovery sooner than would otherwise be the case. The reason is fairly obvious. In the preceding stages of the business cycle, prices rose, and each succeeding increase served to discourage building until costs lowered. With lower costs existing during the stage of depression, construction is encouraged with the additional stimulus gained from the postponement of previous needs.

Marketing during a period of depression.—Commodity prices usually reach their lowest level when depression is at its deepest stage. As prices are determined by conditions of supply and demand, this would indicate a considerable lack of balance between the determining factors. The fact that the supply exceeds the demand does not necessarily mean that an abnormal supply has been produced. Quite often—as was the case in 1921—the cause of the maladjustment is to be found in decreased demand. And demand has fallen off chiefly because purchasing power, as represented by wages, has declined.

Merchandise movements, as represented in the shipment of commodities over the various transportation routes, likewise reach their lowest level. The curtailment of industrial activity is accurately reflected in the volume of traffic which covers the movement of raw material to the factory as well as finished products from the factory to the consumer.

Foreign trade constitutes a rather anomalous situation. If

<sup>4</sup>Fluctuations in agricultural production are due chiefly to non-economic reasons, and are believed, in some circles, to be the cause of business cycles. Sombart's theory follows along this line, as does also Moore's. "The fundamental, persistent cause of the cycles in the yield of the crops is the cyclical movement in the weather conditions represented by the rhythmically changing amount of rainfall; the cyclical movement in the yield of the crops is the fundamental, persistent cause of economic cycles."—"Economic Cycles, Their Law and Cause," Henry L. Moore, p. 149.

the depression is world-wide, both exports and imports will be abnormally small. Should the depression be confined to this country, the tendency would be for exports to increase and imports to decline. The low prices obtaining would encourage purchases from abroad, and would discourage shipments into the country.

Retail sales are dull when times are poor. Industrial inactivity has resulted in reduced purchasing power which expresses itself in the volume of sales at the retail stores.

Labor conditions during a period of depression.—With industrial activity considerably below normal, employment conditions, from the standpoint of the workers, are distinctly unfavorable during an era of depression. The curtailment of operations has caused a material reduction in the number of workers employed. A distinct labor surplus arises, with the number unemployed constantly increasing as part-time operations and even complete suspensions develop. Unemployment is at its maximum at the final stage of the depression period.

Wages are low when industrial inactivity prevails. Although there is a notable tendency at certain stages of the business cycle for the movement to lag behind the current trend, wages generally increase slightly before evidences of recovery are to be noted. As has previously been stated, the low level of wages during adverse times has its reflection in diminished purchasing power with resultant effect upon price levels.

Industrial controversies are uncommon at this stage. Employees are not in a position to maintain effectual resistance against the policies of employers which may be contrary to the interest of the workers. It is a serious indictment of our industrial society that in alternate periods of commercial and industrial activity and dullness, capital and labor each continually seeks to take advantage of the opportunities afforded to gain at the expense of the other.

Immigration generally falls off during the earlier stages of the depression period, due to adverse labor conditions. However, relative conditions in the homeland of the immigrant and in the country to which he migrates, have a greater influence upon his movement than conditions in the new land alone.

Conditions of corporate prosperity during a period of depression.—Corporate earnings are decidedly affected by a period of depression. The nature of the respective enterprises plays an important part in this regard, but in general business

profits materially decline. Earnings of public utility companies are less adversely affected than those of the pure industrials, because of the relative stability of revenue.<sup>5</sup> Many industrial enterprises are not only obliged to suspend the payment of dividends upon outstanding stock, but experience difficulty in meeting the fixed charges upon bond obligations.

Commercial failures naturally increase with a decline in corporate earnings. The trend is not uniform, however, as the maximum, in liabilities at least, is reached in the period of relapse when prices are falling rapidly rather than in the ensuing period of depression when prices tend to stabilize at the lower levels.

New security issues decrease in the depression period due both to the lessened demand for capital for new enterprises and to the decreased new capital available. Current low interest rates encourage corporate borrowers to issue long term bonds at this stage. Thus, long term financing is the rule during periods of depression, just as short term issues are used in periods of prosperity.

Stock exchange transactions decrease in periods of depression. As the stock market constantly endeavors to discount the future, a recovery in the market usually precedes a recovery in general conditions. For this reason, activity on the exchanges, especially in industrial common stocks, is often noticeable toward the end of periods of depression. In this manner, stock market activity serves as an actual barometer and lends color to the belief that the end of the period is not far distant.

**Conditions of finance during a period of depression.**—A decrease in bank clearings signifies lessened business activity. Consequently the volume of clearings reaches its lowest level in a period of depression. This is due to the low level of prices as well as to the smaller number of transactions.

Bank statements occupy the anomalous position of being most satisfactory, from a banking standpoint, when conditions are poorest. The falling off in business has served to decrease the loans of the banks and to increase the reserves. Both of these factors improve the financial strength of the banks.

<sup>5</sup> Indeed we learned during the World War that a period of prosperity and rising prices is less desirable for a public utility than a period of dullness since during a period of rising prices, gross revenues do not increase proportionately with the rise in costs.

Interest rates follow closely the trend of conditions and are lowest in the depression stage, for at this time the banks are obliged to lower rates to keep their loanable funds employed. As has been previously noted, the low interest rates which prevail during periods of depression encourage corporate borrowing for long terms, both to refund existing loans that were issued at higher rates and to expand productive facilities in anticipation of the ensuing period of recovery.

Gold imports usually increase in periods of depression, since decreased merchandise imports and augmented exports cause a favorable trade balance to exist which normally is paid in gold imports. Gold production is stimulated in a régime of low prices, just as it is discouraged when prices are high. An increase in the supply of gold may serve either of two functions: it may be used to strengthen banking reserves, or to form the basis for an expansion of the volume of credit in employment. The stimulus given to the money market from the gold importations tends to shorten the period of depression, just as the exportation of gold during a period of prosperity operates to check the advancing movement.

**The recovery of business activity.**—The transition from a period of depression to one of recovery is of gradual development. Just as production is overdone in a period of prosperity, it is underdone when depression rules, and conditions which obtain when business is dull tend to work out their own salvation. Consumption continues with definite regularity regardless of current conditions, and the surplus stocks gained in the period of activity are substantially reduced during times of depression.

Low production costs, accomplished through greater efficiency of labor even more than through lower wage scales, low interest rates, and abnormally low costs of materials, encourage a revival of industry. This factor, together with an increased demand for commodities, which eventually results after the effect of underproduction becomes apparent, causes producers to increase their output. The reaction does not occur in all lines simultaneously, but an improvement in one or more of the important industries has a stimulating effect upon the others. Although it is difficult to determine exactly when recovery begins, after the improvement has once started, it gains momen-



tum and "each effect reacts to strengthen the cause which preceded it."<sup>6</sup>

**Production in a period of recovery.**—An increase in productivity is the chief feature of the period of recovery. Agriculture is less affected than industrial operations and construction work, due, as has been previously stated, to its inherent inflexibility. Industry throws off the lethargy which was manifest while dullness prevailed and there is an appreciable revival of activity to meet an increased demand which is just asserting itself. The betterment comes slowly at first owing to the caution of producers who are unable to determine the degree of permanency in the improvement of conditions.

New construction which includes highways, railroad mileage and rolling stock, and structures of all kinds, reaches its maximum during the period of recovery. Costs are comparatively low at this stage. Moreover, the improvement in business conditions creates a feeling of optimism which encourages new building generally. As expenditures for industrial maintenance were radically reduced during dull times, the recovery in business induces manufacturers to restore their plants to full efficiency by increasing the outlay for maintenance, improvements, and betterments at this period.

**Marketing during a period of recovery.**—Prices advance during a period of recovery. In fact, the rise in prices—which is in itself the effect of a maladjustment of supply and demand as is explained in a following chapter—is the most important single factor which causes the trend of conditions to

\* "An increase in the physical volume of business, indeed, seems to be an invariable concomitant of revivals; but this increase usually sets in months, even a year or more, before depression has relaxed. . . . The course of wholesale prices is an even less reliable guide. For, contrary to widely accepted opinion, prices do not always rise in the early stages of revival, and they do sometimes turn upward during depression. As for the money market, its changes during periods of business revival are irregular in part, and in part indistinguishable continuations of changes already under way before the revival began. For example, discount rates sometimes rise and sometimes fall when the change for the better occurs; bank loans expand, but the expansion antedates the revival; the ratio of reserves to deposits may move in either direction; the ratio of loans to deposits usually, but not invariably, rises; applications for investment loans may increase before the revival or not until it has come; the purchases of bonds and stocks are similarly erratic in their behavior, etc. The statistics of unemployment, monetary circulation, savings, profits, and bankruptcies are no safer guides than those which have been mentioned. Thus there is no certain way of predicting when business will begin to recover from a prevailing depression."—"Business Cycles," W. C. Mitchell, p. 457.

move upward. At no stage of the business cycle, however, do prices change uniformly. Wholesale prices invariably move first.<sup>7</sup> But wholesale prices do not advance evenly. Those commodities which serve as a basis for speculative transactions on the exchanges—raw materials such as cotton and copper—increase in price before others in which there is less interest. Of the raw materials, agricultural products advance more quickly than mineral, due to the greater facility in adjusting the latter to changing conditions. Wholesale prices of semi-finished products advance after the increase in raw materials, and a natural consequence thereof. Wholesale prices of finished products similarly follow the advance in raw materials and semi-finished goods. Articles of consumption increase in price before articles used in production.<sup>8</sup>

The increase in productivity entails a larger volume of merchandise shipments, in raw material and partly finished form from the sources of derivation to the producers, and in finished form from producers to consumers. Car loadings are better and the number of idle freight cars, which reached its maximum during the depression period, diminishes gradually.

Foreign trade follows no uniform trend during periods of recovery. The normal influence will be for exports to decline somewhat, due as much to revived interest in the domestic market as to advancing prices. Imports increase, encouraged by higher prices which represent an increased demand for goods and larger purchasing power. Yet comparative conditions are of most significance. A change in conditions of demand and supply abroad may be one of the chief determinants—as was the case in 1915—in bringing about the period of recovery.

Retail sales increase, but slowly at first. The purchasing power of the public determines the total retail sales, and, as will be seen, increases in wages lag behind in a period of recovery. The tendency of the general public is to spend as it earns, and naturally expenditures cannot be increased until income ad-

<sup>7</sup> This was well demonstrated in the spring of 1920, when many retailers, notably the Wanamaker stores, reduced retail prices without a corresponding decline in wholesale costs. When the retailers found they could not replenish their stocks at lower prices, the reduction sales stopped.

<sup>8</sup> "Business Cycles," W. C. Mitchell, p. 461.

vances. Incidentally this is the main reason why retail prices do not advance so quickly as wholesale.<sup>9</sup>

**Labor conditions during a period of recovery.**—The number of unemployed workers decreases in a period of recovery. Machine operation and efficiency of management increase profits through the reduction of costs—but substantial increases in productivity can be accomplished only through an increase in the number of workers. A progressive world constantly creates new demands more than sufficient to occupy the time of workers supplanted by improved methods of production.

Wages increase gradually, a continuation of the trend which began even before the period of depression ended. Total wages increase more rapidly than the rate of wages which is taken as the usual criterion. A period of recovery brings full time employment to the workers which is, itself, equivalent to a substantial increase in wages. The rate of wages increases only after the recovery is well under way when increased living costs lead the workers to seek larger wages. Unlike commodity prices, there is popularly considered to be an equilibrium of wages—a point at which the income of labor is sufficient to grant a decent living. As wages have been below this point, a restoration to the equilibrium is sufficient to cause labor to refrain from asking more for the time being.

Controversies are rare. Increased profits to employers cause them to desire to increase production and they are content to increase the wages of labor, as the advance is always more than offset by the increase in profit. The demands of labor at this stage are usually conservative—the privations of dull times are too recent not to have an effect. Cooperation between capital and labor is most easily obtainable at this time.

Immigration increases, but as has been previously stated, comparative conditions at home and abroad become the determining factor. Unskilled labor comes into greater demand, and any substantial increase in this respect must come through immigration.

<sup>9</sup> Dr. E. Engel, Chief of the Prussian Statistical Bureau, over thirty-five years ago, formulated four propositions with regard to family budgets, which are probably as true to-day as then: (1) the greater the income, the smaller the relative percentage of outlay for subsistence; (2) the percentage of outlay for clothing is approximately the same, whatever the income; (3) the percentage of outlay for lodging, or rent, and for fuel and light, is invariably the same, whatever the income; and (4) as the income increases in amount, the percentage of outlay for sundries becomes greater.—“Economic Crises,” E. D. Jones, p. 38.



**Conditions of corporate prosperity during a period of recovery.**—Corporate earnings increase rapidly in a period of recovery. Prices advance more quickly than production costs and thus the margin of profit becomes larger. Not only is the profit on each transaction increased, but the number of transactions also multiply, both of which factors serve further to increase the total gain. Even after production costs advance, the volume of transactions tends to keep earnings high. As profit is the predominant factor in business, the increase in earnings, incidental to a period of recovery, stimulates industrial activity and strengthens the cause which preceded it.

Commercial failures show a marked falling-off. In an era of rising prices, business profits are secured without the corollary of even ordinary acumen. It is simply necessary to buy, to hold for a time, and then to sell. The upward trend of prices will bring a profit to even the least sagacious. Consequently bankruptcies and insolvencies become less and less frequent.

New security issues gain in volume, principally because of the desire on the part of producers to expand their output capacity to meet the increased demand for their products. The advance in the charges for capital—interest rates—has not been sufficient thus far to discourage long term borrowing.

A recovery in business conditions causes a boom in the stock market. More likely than not, the boom will precede the recovery rather than follow—a phenomenon puzzling to one who does not appreciate that the market discounts all news, good and bad alike, before the happening of the event. The market value of stock depends upon the capitalized earning power—past, present, and prospective—of the issuing corporation.<sup>10</sup> As the period of recovery means prospective increased earning power to the company, stocks ordinarily advance before the earnings become actual. This accounts for declines later when profits, although greatly in excess of those for preceding periods, are less than have been anticipated. The stocks which declined the most during the depression stage—especially those

<sup>10</sup> An enterprise which earns \$100,000 annually is estimated to have a value of about \$1,000,000 although the physical property may have cost considerably less. This process of valuation is termed "capitalizing the earning power" on a 10 per cent basis. The value of each share fluctuates in accordance with changes in the capitalized earning power of the company rather than with changes in the value of the physical assets.

which were obliged to suspend dividend payments—rise more rapidly than the others, in anticipation of an early restoration of dividends. Common stocks rise more rapidly than preferred both because they had declined more in the preceding period and because the potential dividends on the common stock are in proportion to the total earnings of the company whereas the preferred is in most instances limited to a comparatively small fixed return, regardless of abundant earnings.

**Conditions of finance during a period of recovery.**—Bank clearings gain in amount due to increased prices as well as to a greater volume of transactions. Bank statements show an increase in loans and in money in circulation with a corresponding decline in the ratio of reserves to liabilities. Interest rates—except the rate on call loans which is fixed daily and therefore fluctuates constantly—strengthen with an increase in the demand for credit accommodation and tend to advance, although well after the recovery has set in.<sup>11</sup> Yet it has been noted that interest rates lower even after the period of recovery has begun.<sup>12</sup>

International movements of gold, exports and imports, are smallest at this stage. The influx which was created during the era of depression by the influence of low domestic prices is checked by the advance in the price level. Moreover, the export of gold which eventually follows high prices is not reached until later in the cycle.

<sup>11</sup> Prof. Irving Fisher has suggested that the lagging adjustment of the rate of interest to changing conditions may account for the phenomena of business cycles. Borrowers take advantage of low interest rates to increase loans—deposit currency—which increase, according to Professor Fisher's theory, causes prices to rise. The rate of interest should always be high enough to prevent inflation, i.e., the granting of credit beyond actual requirements, or over-borrowing. The belated rise in interest rates checks these operations and makes for the decline which eventually follows.

<sup>12</sup> "Nevertheless, discount rates usually average less in the first year of business revival than in the last year of business depression."—"Business Cycles," W. C. Mitchell, p. 466.

## CHAPTER III

### THE BUSINESS CYCLE (*Continued*)

**The development of the period of prosperity.**—The recovery in business is really a transition stage between periods of depression and prosperity. Although slow at first, the betterment intensifies as it continues. Just as the pendulum swings below a theoretical normal during the depression stage, in a period of recovery the upward swing carries it above the line of normalcy. Psychology plays an important part. A spirit of optimism now pervades commerce and stimulates production generally. Enthusiasm is epidemic. Increasing prices are bringing larger profits and the volume of business grows continually. Business has recovered from its slump and enters the stage of prosperity.

**Production during a period of prosperity.**—The high prices which are obtainable in a period of prosperity might reasonably be expected to cause agriculturists to increase their acreage. Weather conditions during the growing season, however, exert a more powerful influence than fluctuating acreage. Experience has taught the farmers to act conservatively in this respect. The record high prices secured for the 1919 crops encouraged large harvests in 1920. Prices declined to such an extent in the meantime, however, that, although the volume of agricultural production in 1920 substantially exceeded that of 1919, its value was forty per cent less.<sup>1</sup>

Industrial production has now reached its maximum. The demand for goods seems insatiable. Market price becomes of secondary importance to the major problem of securing deliveries. The lure of abnormally high profits causes producers to become over-enthusiastic regarding future requirements and the manufacturing plants of the country operate almost to the

<sup>1</sup> Some specific illustrations follow:

|          |                                 |                 |
|----------|---------------------------------|-----------------|
| Corn:    | 1920—3,232,367,000 bushels..... | \$2,189,721,000 |
|          | 1919—2,917,450,000 bushels..... | 3,934,234,000   |
| Cotton:  | 1920— 12,987,000 bales.....     | 914,590,000     |
|          | 1919— 11,030,000 bales.....     | 1,967,143,000   |
| Tobacco: | 1920—1,508,064,000 pounds.....  | 298,001,000     |
|          | 1919—1,389,458,000 pounds.....  | 542,547,000     |

limit of their capacity. Only a shortage in labor prevents even greater production.

Construction work declines at this stage. The increase in costs—labor as well as materials—causes new building to be curtailed. Difficulty in obtaining labor and materials is a factor as troublesome as advancing prices. Projects accordingly are postponed until such time as conditions are more favorable. Practically all construction entered upon at this stage is for industrial purposes. The close of a period of prosperity finds construction at its lowest point.

**Marketing during a period of prosperity.**—Prices continue to advance throughout the period; in fact, a decline in the level of prices indicates the end of the period. As long as the demand for commodities and services exceeds the supply, prices will advance. It is only after supply—which has been constantly increasing—approximates the demand that any retrogression is probable. The increasing level of prices brings increased profits but not in the same proportion as formerly since production costs are mounting even more rapidly as the prosperity stage develops. Labor is demanding an increasing share in the distribution; and is less efficient even at higher wages. Raw material costs are constantly advancing, as are also supplementary costs such as the charge for borrowed capital. Prices do not stop advancing suddenly. An increasing resistance develops as they go higher and further advances become more gradual. Toward the close of a period of prosperity prices appear to be stabilizing at the high level.

Commodity shipments reach a maximum at this time. So great is the traffic that actual congestion at points along the principal arteries compel the placing of embargoes on shipments. The number of idle cars declines and the height of the period often finds the usual surplus of cars converted into a deficit. So important do adequate transportation facilities become that consumers, in their eagerness to secure goods, are often willing to pay a substantial premium for prompt delivery.

Foreign trade figures are likely to be misleading at this stage. Because of high price levels, the value of both exports and imports has been materially enhanced; in volume, however, the gain is not so great. Exports tend to decline due to the high domestic prices and to the inability of producers to meet the home demand. Imports increase for the same reason that exports diminish.

Retail sales greatly increase. The inherent inclination of the average American to spend as much as he earns finds constant expression in the sales of the retail stores. The increase is notably in articles of luxury rather than uniform in all lines.

**Labor conditions during a period of prosperity.**—Unemployment ceases to be a problem in periods of prosperity as the difficulty is in securing workers for jobs rather than jobs for workers. The labor problem, instead of being entirely solved, assumes a different aspect, even more troublesome than before. As increased production is the chief desideratum, labor has the upper hand and is in a position to compel employers to make conditions of employment more satisfactory to the workers. Just as employers, in times of depression, force labor to accept the terms of the former, in times of activity, labor goes to the opposite extreme and prescribes the conditions under which it will work.

Wages increase most rapidly at this stage. An incessant demand for greater output, a shortage in the number of workers, competition between rival industries, increased living costs, and other factors induce the workers to seek higher wages. The ease with which increases are secured early in the period encourages further demands at short intervals and causes production costs to mount more quickly than selling prices. Incidentally labor becomes less efficient as the period continues, as the necessity of doing good work is no longer imperative. Wages tend upward throughout the period and do not reach their highest point until business has begun the retrograde movement.

This period is marked by many industrial controversies. As the workers continue to demand higher wages—both in the form of increased rates and shorter hours—the resistance of the employers becomes stronger. In the early stages, increases are freely granted as enhanced earnings more than counterbalance the effect. But as production costs increase more proportionately than selling prices, the profit margin lessens and employers find themselves less inclined to grant further increases. The controversies frequently develop into strikes which tend to be longer continued as the period progresses, due to the increasing resistance of the employers as well as to the better economic position of the workers.

Immigration increases during prosperous times. In addition to the natural attraction in the form of high wages, the shortage of domestic labor encourages employers to seek an ade-



quacy of workers from foreign lands and induce immigration that otherwise might not have resulted.

**Conditions of corporate prosperity during a period of prosperity.**—Business profits enormously increase. In addition to the ordinary margin of profit which would be gained if prices remained stable, the continual advance in prices acts to magnify the earnings. Even after the margin of profit diminishes, for a time the increase in the volume of transactions makes the total net profit as great as ever. The increase in profits is the impelling force which causes business endeavor to reach such a high degree of activity at this stage. The psychology of getting the most “while the going is good” stimulates the entire commercial field.

Commercial failures continue to decline in number as the prosperity period lengthens. This is a natural corollary to the increase in business earnings. The continued decrease in the number of failures is a criterion of the degree of prosperity which exists and is also a good barometer of the approach of the end of the period when the inevitable reaction must come. An extremely low percentage in commercial failures is a warning of financial storms in the not distant future.

New security issues reach their highest point at this time. The nature of the securities offered changes with each period of the cycle. In the depression stage, new capital was secured through the sale of long term bonds on low interest rates. In the prosperity stage, high interest rates confine corporate borrowing to short terms, and cause most of the new capital to be raised through the sale of stock which bears a high dividend rate the payment of which, however, is contingent upon earnings and is not fixed and definite as in the case of bonds. This era is notable for the marketing of vast quantities of securities of doubtful value. The promise of unreasonably high profits upon such stocks appeals to credulous investors who find themselves in the unusual position of having a surplus income.

Stock exchange transactions are large. The increased incomes of many individuals encourage them to enter the speculative markets. Trading decreases in volume, however, as the period continues, and often the height of the prosperity era finds comparative dullness on the exchanges. The stock market is looking ahead, and the close of the period usually finds that prices, especially of those stocks which advanced most at the beginning, have already started to decline.



**Conditions of finance during a period of prosperity.**—Bank clearings reach a maximum at the close of the period. At that time prices are highest and the volume of transactions is greatest. Clearings do not decrease until well after the retrograde movement has begun.

Bank statements reflect large increases in loans and deposits, and money in circulation, as well as a substantial decrease in the ratio of cash reserve to obligations. The gain in business activity has been facilitated to a marked degree by the granting of bank credits. Eventually the credit availability at the banks approaches the point of exhaustion, and then the end of the prosperity era is in sight.

Interest rates follow, rather than keep pace with the trend of conditions. The increase in loans and decrease in the ratio of reserves compel bankers to increase the charge for borrowing to protect their position as well as to check inflation. At first, advancing interest rates are ineffectual due to the large profit margins, but as earnings decrease and interest charges increase, the increased cost of credit effectually checks borrowing.

A period of prosperity affects the gold situation mainly by causing a decrease in production. Increased cost of production coupled with a stationary market price—for gold cannot change in price as under modern monetary systems gold is price—results in a distinct curtailment in the output.<sup>2</sup> As a result of increased imports and diminished exports, there is a normal tendency for gold to be exported at this stage.

**The beginning of retrogression.**—A period of prosperity tends to work out its own undoing. The main factor is the decrease in earnings which is the combined resultant of various developments during the period. Production costs in the form of expenditures for material and wages, decreased efficiency of workers, and interest charges, encroach upon sales prices which cannot interminably be raised. The increase in the supply is eventually sufficient to meet the demand and the restoration of this balance alone places an economic check upon further advances. The cost of production did not determine the price while there was a shortage and will not determine the current price when a surplus exists. Moreover, greater resistance de-

<sup>2</sup> Prior to the World War, the average annual gold production of the world was about \$500,000,000. In 1919, it had declined to about \$350,000,000.

velops as prices increase, and demand actually declines due to unwillingness rather than to inability to purchase.<sup>3</sup>

A financial crisis often marks the end of a period of prosperity and the beginning of retrogression. The crisis is attributable chiefly to the use of credit. As is shown later, periods of prosperity and depression would probably exist even were credit not used. But credit permits the expansion of business to go far beyond what would otherwise be the case. Credit is based upon confidence, and in business, confidence is predicated upon profits. While prices are advancing, profits are easily obtained and there is general confidence in the situation. As profits decrease, apprehension develops and credit becomes increasingly difficult to obtain. Furthermore, the credit which one firm extends to another is largely dependent upon the credit the first firm can obtain from its bank and that in turn is limited by the credit position of the bank. Bank loans are easily obtainable at the beginning of the period of recovery as the position of the banks is strong; but as loans expand with the increase in business activity, the banks eventually are obliged to curtail their loans and the credit necessary to finance a continuation of the expansion of business becomes obtainable only on restrictive terms.

Retrogression starts, therefore, when prices begin to fall. Prices decline because of a restoration of an approximate balance between conditions of demand and supply. Curtailment of credit not only serves to check advancing prices—since inability to borrow is tantamount to inability to buy—but often

<sup>3</sup> "The world of business is a system comprising numberless independent enterprises, bound together by industrial, commercial and financial ties. For the continuance of prosperity it is indispensable that a certain balance be maintained between the fundamental processes which constitute the activity of this system. The demand for goods of every kind must keep pace with the increasing supply, despite the steadily rising prices, the cost of raw materials must not increase too much in comparison with the selling prices of manufactured goods; mercantile collections must grow with mercantile credits; bank reserves must expand with demand liabilities; the cost of living must not rise much faster than money incomes; banks and investors must continue able to provide the ever-increasing loan funds required by business enterprises; and the like. If there occurs a serious maladjustment in the rate at which any of these factors are growing in relations to the others, some business enterprises will suffer loss of profits. Then the bonds which unite different enterprises will become channels through which the injury will spread to other enterprises, just as they were recently channels for the spread of prosperity. Unless the original injury is promptly healed, there is grave danger that the cumulation of prosperity will be converted into a cumulation of depression."—"Business Cycles," W. C. Mitchell, p. 473.

precipitates a financial crisis in the transition from the period of prosperity.

**Panics and crises.**—Panics are caused by a sudden loss of confidence on the part of the business world.<sup>4</sup> The belief that prices are about to decline prompts holders of commodities and securities to liquidate at the earliest possible moment. Naturally this is coincident with a disinclination on the part of buyers to purchase. Others are obliged to sell to meet credit obligations which they are required to reduce. Supply far exceeds demand for the time being, and a drastic fall in prices results. Sellers are unable to understand why there is such a lack of purchasing demand and are seized with fear. In their fright, they offer their holdings at sacrifice prices. In a market of this kind, with many sellers and few buyers, prices drop precipitously. The decline in prices brings severe losses to those who were carrying large stocks or who had committed themselves on future contracts at high unit prices.

The transition between periods of prosperity often occurs without the concurrence of a panic or even of a crisis. The efficiency of the Federal Reserve System in meeting a financial emergency was well demonstrated in 1920, and there is reason to believe that panics, at least in the former sense of the word, will rarely occur in the United States.

Panics and crises, when they do occur, are of limited duration. At such a time, even the worst is discounted and a more reasonable attitude is quickly assumed by the business world. The demand for the immediate liquidation of loans—a policy both fatuous and ruinous as an intelligent creditor does not collect his debts by forcing debtors into bankruptcy—ceases and with it terminates the critical stage. But business does not resume its former status. A panic marks but the beginning of the retrogressive movement.

**Production during a period of retrogression.**—Agriculture

<sup>4</sup>“A more complete and philosophical solution of the problem is found, it seems to me, in the constitution of human nature itself, which bears with impatience the dullness of a monotonous level, and rapidly passes from one extreme to another. Enthusiasm and despondency are equally epidemic. When prices are rising and when profits, even when only on paper, roll up rapidly, everybody is eager to buy. But when, after this eagerness has evaporated and suspicion succeeds to confidence, the current turns the other way, everybody desires to sell, prices fall, and until the remembrance of the losses thus incurred is obliterated by time, nobody is willing to make fresh ventures.”—Matthew Marshall in *Engineering Magazine*, vol. V, p. 415, quoted by T. E. Burton in “Panics and Depressions.”

is not largely affected by the retrogression of business. The farmers have a more inherent belief in the fundamental soundness of the country regardless of the sequence of good times and bad times, induced to no small extent by the inability to regulate production similarly as in the case of the industrial plans. Workers who left agriculture to gain the larger wages obtainable in the factories, return to the farm with the advent of an industrial depression.

Industrial production falls off. Stocks on hand are more than adequate to meet the existing demand which is but a fraction of its former volume. Moreover, the decline in prices impels producers to curtail operations only to the orders on hand. Incidentally the cancellation of unfilled orders placed during the period of prosperity is usually greater in volume than new orders being received. Just as in a rising market, each new advance gave an additional gain to manufacturers, in a falling market each further decline means added loss to producers in proportion to the quantity of merchandise they are carrying. As prices continue to fall, the curtailment of industrial activity becomes more general, and leads into the period of depression where it reaches its lowest phase.

Construction operations are decidedly limited at this stage. The spirit of pessimism in the market is more than sufficient to offset the encouragement offered through lower construction costs. There is also a tendency, now that prices are falling, to wait for the bottom rather than begin while the downward trend continues.

Marketing during a period of retrogression.—Prices decline at this stage, rapidly at first, but more gradually as the period continues. The lack of uniformity in the fluctuations is again apparent. Wholesale prices decline earlier than retail. Articles of production fall before articles of consumption. Raw material prices, especially of mineral products, drop in advance of those of manufactured goods. The lack of support to the market which accounts for the continued decline in price levels is a reflection of the reduced purchasing power of the public coincident with current wage reductions. As prices decline, profits are adversely affected, and inactivity spreads throughout commerce.

Merchandise shipments fall off. The deficit in idle cars is eliminated, and successive reports soon indicate an increasing



surplus. Traffic congestion ends and deliveries are effected with promptness.

Foreign trade receives greater attention. The decrease in the domestic demand causes producers to seek markets abroad. The decline in prices is of material assistance, and there is a certain tendency for exports to increase. Imports lower both in volume and in value.

Retail sales do not decline immediately. Wages—which determine purchasing power—are not reduced at first and consequently retail sales do not feel the effect of the change in condition until the reductions actually become effective.

Labor conditions during a period of retrogression.—The curtailment of industrial activity brings a corresponding reduction in the number of workers. In some instances, the same result occurs through part-time operations. Unemployment which becomes manifest at this stage does not become critical until retrogression has developed into actual depression.

The trend of wages is downward. Reductions are not put into effect at the beginning of the period, however. In many cases wage agreements guaranteeing existing scales for a definite period prevent immediate reductions. Moreover, workers strenuously resist reductions, and in preference to strikes and complete suspension of operations, employers continue the existing rate temporarily. As the period continues, producers are obliged to reduce wages to continue operations since wages comprise on the average about two-thirds of the entire production cost. The resistance on the part of the workers becomes less effective in view of lower living costs and the growth in the number of unemployed. Production costs are lowered not alone through diminished wage scales but through the increased productivity of the individual worker.

Frequent controversies occur at the beginning of the period when wage reductions are initiated. Controversies which developed into strikes in the period of activity now develop into lockouts since, in many instances, employers can more economically suspend operations than continue. As industrial activity lessens, the workers are more disposed to accept the reductions as inevitable, and controversies become comparatively less numerous.

Immigration receives a decided check. The labor shortage

has changed into a surplus and the inducement of plenty of work at high wages no longer exists. Incidentally organized labor brings pressure to bear upon Congress to take action to restrict immigration at this phase.

**Conditions of corporate prosperity during a period of retrogression.**—The decline in prices is accompanied by a corresponding decline in business profits. The principal loss is incurred in the shrinkage in the value of inventories held over from the preceding period. The income statements of the leading American industrial companies for 1920 bear eloquent testimony in this respect. But even before the loss on inventories has been written off, the profits of the enterprises during succeeding periods are substantially less than during the prosperous years. Dividends, especially extra disbursements which are common in a period of prosperity, are materially reduced, and in many cases are omitted to conserve the assets of the company to meet the uncertain days which are ahead.

Business failures increase. The failure of one or two large enterprises is often a feature of the critical stage which usually marks the end of the period of prosperity. Failures at the beginning of the period are comparatively few in number but the total liabilities are large. As prices continue to fall, business men find it increasingly difficult to conduct profitable operations, especially new enterprisers who began during the fair weather of rising prices and who find the procurement of profits under the new order a task requiring a considerable degree of business sagacity.

New security issues decrease abruptly with the beginning of the downward movement and offerings during this period are limited to refunding operations, extending the maturity of loans previously made.

Just as improvement in business conditions causes a boom in the stock markets, so retrogression brings a slump. The bull movement is succeeded by bear operations even before the reaction in business has developed. The market falls and trends downward until definite promise of recovery is in sight.

**Conditions of finance during a period of retrogression.**—Bank clearings decline slowly due more to a decrease in the volume of business than to the price decline, although both are important factors. The volume of transactions reaches a minimum during this period rather than during the succeeding stage of depression.



Bank statements reflect the liquidation through which the market is proceeding. Loans do not decline at first to any substantial extent because of the inability of borrowers to market their holdings—a condition which has recently gained the appellation of “frozen credit.” But loans gradually are paid off and deposits decline in accordance. The cash position of the banks is strengthened with the decrease in liabilities, and credit becomes more easily obtainable.

Interest rates do not immediately decline but follow their usual habit of lagging behind. The credit position of the banks does not improve at once since outstanding loans are liquidated only with extreme difficulty. Eventually, however, the decline in business activity brings betterment to the position of the banks and interest rates lower in consequence.

Gold exports are checked at this stage by an increase in merchandise exports and a decline in imports which restores a state of balance to total international shipments and receipts. This trend continues as depression develops and eventually brings gold imports in settlement of the excess of exports.

**The complete cycle.**—The business cycle has now swung back to the period of depression which was the point of origin in the present discussion. The manner in which business conditions follow an unending cyclical movement having been discussed, some attention will now be given to the cause of the fluctuations.

## CHAPTER IV

### THE INFLUENCE OF A MONEY ECONOMY

**The effect of a money economy.**—An approach to the task of determining the causes of the undulations of business must have its origin in an appreciation of the institution of money economy which dominates commercial endeavor. Production and distribution should be the two most significant terms in business, but the commercial world subordinates them to the twin deities of price and profit.

Price is the amount of money for which commodities exchange. Profit is the difference between sales price and cost of sales, and is universally comprehended in terms of money. Men engage in commerce for the profit to be derived, and habitually conceive this reward in terms of money. True, in the ultimate sense, men do not strive for money but for the command over the world's goods which money gives. Subjectively, men work that they may be in a position to satisfy their desires; but objectively, they work for money.<sup>1</sup>

Business is conducted for the sake of profits, and since profit in commerce is measured in terms of money, the existing commercial organization is considered to be a money economy. It is not altogether propitious that this should be the case. As a medium of exchange, money facilitates the conduct of business immeasurably. But men have come to regard money as much more than a simple medium of exchange. It serves as a standard of value in comparing the worth of commodities; as a store of value in enabling persons to transfer present goods and services into future commodities; and as a standard of deferred payment in the performance of credit transactions. The universal satisfaction with which money serves as a medium of exchange, has led men to believe that it serves the other functions with equal adequacy. Unfortunately, this condition does not obtain, and this brings about one of the

<sup>1</sup> "Commodities, those economic goods which are the real objects of human desire, apparently occupy a secondary place in the business world, for in the conscious purposes and desires of men money is the real thing."—"Money and Currency," Jos. F. Johnson, p. 10.

factors contributing to the sequence of business prosperity and depression.

**Subordination of production.**—But the most important effect of the money economy upon commerce is the fact that it dominates productivity. Production, as the underlying motive of business, should be the controlling factor in commercial endeavor, and money should be one of the agencies by which productivity is facilitated. It is indeed an ironical development in commerce, that money, one of the means to an end, should, to the average individual, become the conscious end. In the true sense, the prosperity of any country depends upon its productivity, or in other words, upon an adequacy of goods. But the money economy requires that the prosperity of any individual in that country be measured in the adequacy of money. As the country is comprised of the individuals, the adequacy of money unfortunately proves a more potent factor than the adequacy of goods.<sup>2</sup>

**An analysis of price.**—As an inquiry into the causes of periods of business prosperity and depression resolves itself into the question of money-making, and as that is directly dependent upon the relationship of prices, an analysis of the method by which prices are determined becomes of major significance. The task is not easy. The simple statement that the price of any commodity depends upon the relationship between the demand and the supply of the commodity merely scratches the surface of the problem. Consideration must be given to the manner in which demand is created before it can be measured; and also to the manner in which the current supply came into existence.

<sup>2</sup> "To the nation the making of money is important in a fashion quite different. Comfort and misery do not depend upon the aggregate of money incomes received by its citizens; they do depend upon the abundance of useful goods. Efficiency in producing useful goods is important to an individual chiefly because it enhances his ability to make money; money-making is important to a nation chiefly because it enhances the efficiency of production. Natural resources, mechanical equipment, and industrial skill are factors of fundamental importance under any form of economic organization. But where money economy dominates, natural resources are not developed, mechanical equipment is not provided, industrial skill is not exercised, unless conditions are such as to promise a money profit to those who direct production. The elaborate cooperative process by which a nation's myriad workers provide for the meeting of each other's needs is thus brought into precarious dependence upon factors which have but a remote connection with the material conditions of well-being—factors which determine the prospects of making money."—"Business Cycles," W. C. Mitchell, p. 21.

Price comprehends two elements: cost plus profit, or, cost minus loss. Business men always regard price with relation to cost, as herein lies the element of profit, which, as has been previously stated, is the apparent reason causing them to follow commercial pursuits. Surprising would it be, therefore, to find any single factor exerting greater influence upon the price of any commodity than its cost of production.<sup>3</sup>

**Effect of cost of production.**—Under conditions of free competition, the main factor in the establishment of price is cost of production. Goods which cost nothing to produce have no price; they are free. But cost of production is not the only factor affecting prices. In fact, changing conditions of demand and supply are continually causing prices to be established seemingly independent of the cost of production. During the first three months of 1920 raw cotton was selling at over 40 cents a pound, and during the last three months of the same year, it was quoted below 20 cents; changes in production cost could not and did not account for the change in the market price. Other factors, to which consideration is about to be given, often have greater influence than the cost of production, but in the long run production cost is the basis of the equilibrium to which price movements tend to return after the other forces have spent themselves.

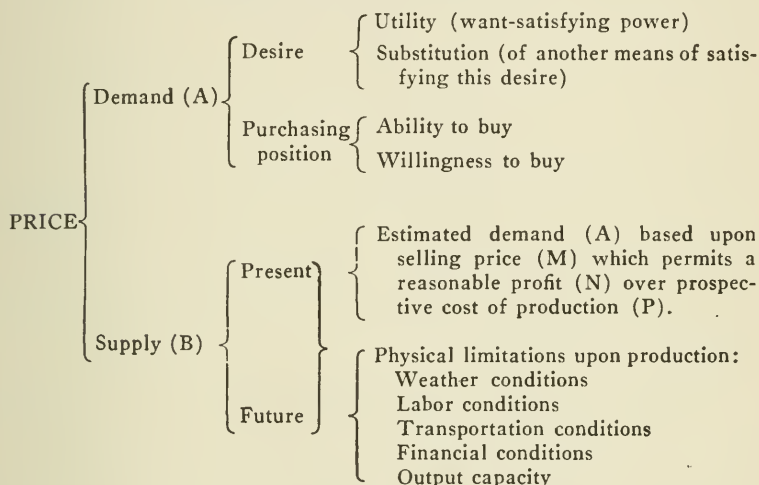
**Factors in price determination.**—Prices are popularly assumed to be determined by conditions of demand and supply, but, while this is true, it would be more precise to add "and by prospective profits." Demand measures *value*, but supply determines *price*. Producers therefore always endeavor to regulate the supply of any commodity in adjustment with the demand at a price which will permit a reasonable margin of profit over the cost of production.

The regulation of the supply to meet the demand is a problem of large proportions. It is more than the biggest problem in business—it is business itself. The ability of men successfully to contend with this problem measures their business capacity and, by the same token, their monetary reward. Every individual in commerce has this problem, in direct or indirect form, constantly before him. In its essence, the task is one of predetermination, and those individuals are most successful who have the best foresight.

<sup>3</sup> Cost of production is used here in its broadest sense. It includes distribution cost as well as production.

The problem, like "all Gaul," is divided in three parts, as is shown in the accompanying analysis. The first task is to estimate what the demand will be at a future time, i.e., when the new supply reaches the market, upon the basis of a given price which is estimated in accordance with production cost. The second is to produce the new supply in the desired quantity despite physical restrictions which constantly arise in production. The third is to predetermine the prospective cost

# DIAGRAM ANALYSIS OF PRICE



of production. In each case, the possibility of error, and consequently of loss, since the business man must back his judgment with his money, is extremely large.

**Estimating the demand.**—The first part of the major problem—and deserving the title of major problem—is the task of estimating what the demand will be when the new supply reaches the market. Over a reasonably long period, demand varies with price. At a given price, there is a certain demand, represented by those willing to pay that price, which is known as the effective demand. The demand at a lower price would normally be greater, and this is considered the potential demand. The effective demand naturally receives the greater attention.

Demand is desire qualified by purchasing position. Most individuals have unlimited desires but limited purchasing ability. Hence, demand is not merely the total desires. Desire



is predicated upon utility which is the power of the commodity to satisfy wants. A community desires wheat because its product, bread, satisfies hunger. But utility alone does not determine desire, as the substitution of another commodity, corn, for example, can satisfy the same desire.

**Effect of purchasing position.**—Purchasing position, as well as desire, determines the effective demand. The purchasing position of an individual depends upon his ability and willingness to purchase. The ability of prospective customers to purchase may be gauged usually from conditions of employment and corporate prosperity, which are taken up in detail in a later chapter. One of the contributing causes in the rise in price levels between 1914 and 1920 was the increased purchasing power of the public. Willingness to purchase is not always synonymous with ability. The "buyer's strike" during the latter part of 1920 was quite irrespective of the ability of purchasers to make payment. Because relative willingness to purchase is of psychological creation, its predetermination is difficult. Yet an unwillingness to purchase is always evident in a declining market; the unusual phase of the 1920 situation was that it was one of the causes of the decline.

The first problem of the producer, therefore, is to estimate the prospective demand at a certain price. He appreciates that any error he commits at this point, or, for that matter, at any other step in his problem, will tend to make the basic price different from what he anticipates, and he acts with greater caution by reason thereof. The experience of previous operations is his chief—often his only—criterion, and invaluable as this assistance is, the producer is apt to overemphasize its importance. A more scientific attempt on the part of the producers to meet the demand on the basis of the new rather than the old conditions would prove decidedly efficacious in reducing the range of price fluctuations.

**Regulating the supply.**—The second part of the problem—after the prospective demand has been estimated—is that of regulating the supply in accordance therewith. The existing supply—which incidently came into existence as a result of calculations similar to those now being considered—is a factor of importance only if the quantity is abnormally large. The close of the World War in 1918 found enormous stocks on hand of many commodities, such as copper and wool, which



naturally tended to curtail further production in those lines. Usually, however, the current supply suffices chiefly to meet the consumptive requirements until the new supply is available and to provide a reserve—termed carry-over—to meet a possible deficit in the forthcoming supply.<sup>4</sup>

**Limitations upon supply.**—The achievement of a desired production is conditioned upon the successful forecast of the effect of forces both economic and non-economic, which impose physical limitations upon productivity. The restricting elements are the conditions of weather, labor, transportation, finance, and output capacity. In agricultural production, the acreage planted does not determine the total yield; the weather conditions between the planting and the harvest exert a powerful influence. Since weather conditions may not be determined more than a few days in advance, the problem of regulating the agricultural supply to meet the demand is highly difficult. Labor conditions, also, create physical restrictions. The years 1918 and 1919 were marked by decreased production caused by labor shortage aggravated by numerous controversies and decreased efficiency. Conditions of transportation at times are detrimental to productivity as, for example, in 1920 when the railroad congestion made traffic most uncertain. The condition of the money market is another factor which often tends to handicap production. The credit needed to finance the operations of the producers may be obtainable only on unsatisfactory terms; during the years 1920 and 1921 industrial borrowers were obliged to pay as high as 9 and 10 per cent, and even higher, to secure funds. The output capacity may be insufficient, at certain times, especially periods of business revival following periods of curtailed production, to meet the estimated demand.

Producers are obliged to make allowance for each of these contingencies. If proper allowance is not made, and the error may as readily create an oversupply as a shortage, the effect will be to cause an inequality to exist between conditions of demand and supply with consequent fluctuations in price.

**Prospective cost of production.**—The third part of the problem is to estimate the prospective cost of production. Although it has been previously stated that cost of production

<sup>4</sup>Out of an average annual production of about 800,000,000 bushels of wheat in the United States, over 100,000,000 bushels are usually carried over into the next harvest.

was the main factor in the establishment of price, a line of demarcation must be drawn between actual cost and prospective cost. The actual cost of production determines profit—an all-important factor—but, strange to say, has comparatively little influence upon current price.<sup>5</sup>

The prospective cost of production is the point at which the predetermination of supply begins. After the prospective cost has been estimated, a profit margin is added,—which competitive conditions require to be a reasonable amount—and the total is the price which producers expect to realize.<sup>6</sup> This is the price which is used as a basis in estimating the prospective demand as has previously been shown. Estimates of prospective productive costs are based almost entirely upon experience. Actual costs do not always verify prospective costs, due to changes in economic conditions between successive periods of production. Seldom do conditions remain stable for an appreciable time. The undulations of business cause the trend of commercial activity and prosperity constantly to swing upward or downward. As production requires time, the prospective cost will approximate the actual only if proper allowance has been made for current trend of conditions.

The prospective cost of production affects price to the extent that it governs supply. But an error in estimating the prospective cost does not affect price, as by the time the error

<sup>5</sup> "Note that even when the computation of cost of production appears to be a backward-looking computation, it is only as a basis for a further and forward-looking computation. Costs that have been, have no direct bearing upon present price. The supply is as it is, no matter what the costs are now seen to have been. The cost of production that is really and ultimately significant in modifying price is the prospective cost as over against the prospective price. And in most occupations, the computation is for a fairly long term—a season, or a succession of years, or even a lifetime. The bearing of cost, such as it is—and however tardy is its working on the volume of supply,—is significant only for such persons as undertake the cost, and for the supply which it affects, and for the period upon which it bears. Prices are influenced by it by virtue of the fact that there are always enough marginal men in any competitive production to bring about a reduction of the supply, if the relative advantages of the industry appear likely to suffer. And there are always men in other industries, near to their respective margins, who will be attracted to any particular industry if its relative advantages appreciably increase."—"The Economics of Enterprise," H. J. Davenport, p. 69.

<sup>6</sup> "Generally speaking, prices may be considered competitively fixed and in their normal relation to costs when the industry as a whole has earned an average gross profit of anywhere from 9 to 12 per cent on investment."—"A Statistical Analysis of the Relation Between Cost and Price," Kemper Simpson, in *The Quarterly Journal of Economics*, vol. XXXV, No. 2, p. 271.

is ascertained, the price will have been determined by existing conditions of demand and supply. But errors in estimating prospective costs affect profit, which is the difference between price and actual cost, and in this manner affect future prices, as will be seen.

**Effect upon price.**—If the estimated demand has been correctly forecast, and the supply has been accurately regulated in accordance, the price of the commodity will be  $M$ . If likewise, the prospective cost of production coincides with the actual cost, the profit margin will be  $N$ , which affords a reasonable rate of return. A reasonable rate of return will neither encourage nor discourage production and will tend toward stability. Desirable though this result would be, it seldom happens, due to the great difficulty in correctly forecasting all three contingencies.

If inaccurate appraisal has been made of either the demand or the supply, or both, the price will not be  $M$ . If the actual demand exceeds the supply, the price will be  $M+$  and the profit will be  $N+$ , or an abnormal rate of return. This will stimulate production and likely cause overexpansion later. If the actual demand is less than the supply, the price will be  $M-$  and the profit will be  $N-$ , or a subnormal rate of return. This will discourage production and tend to non-employment and industrial depression until the balance is restored. In both of these cases, the actual profit,  $N+$  or  $N-$ , as the case might be, would be subject to revision in proportion to the extent to which the actual cost agrees with the prospective cost.

**Why prices rise.**—A period of marked business activity has its origin in a rise of prices.<sup>7</sup> This is fundamental. Later the increased business activity will contribute to a further rise but this will be after the upward swing is well under way. Now prices do not rise automatically, but because of changes in the relationship of supply and demand.

At a certain time it becomes apparent that the current supply of a given commodity is insufficient to meet the demand. This is because producers have erred in estimating the demand or in regulating the supply. Either they have underestimated the demand or have not made proper allowance for the

<sup>7</sup> "In such a period the potent fact which serves as incentive to the acceleration of business is a rise of prices."—"Theory of Business Enterprise," T. B. Veblen, p. 194.

physical restrictions upon production.<sup>8</sup> While demand exceeds supply, the price of the commodity rises and the profit to producers increases. Since the cost of production is not, at the outset, affected, a marked tendency arises to expand productivity to gain the increased profit. This brings a stimulus to allied industries, especially those supplying producer's goods<sup>9</sup> to the industry concerned, which will tend to increase prices and profits in those lines similarly as in the original. Sooner or later, the increased production catches up with the existing demand and as this fact becomes apparent, a tendency will develop for prices to return to the previous level which gave reasonable but not large profits. Resistance to the decline will be met in increased production costs—material as well as labor—which have developed in the meanwhile and which presently would operate to lower the profit formerly obtainable at the original cost. This resistance cannot be effectual, however, as buyers will pay only a price justified by existing conditions of demand and supply. While demand exceeds supply, high prices are obtainable; but when the supply equals or exceeds the demand, the premium cannot continue. Prices are due to swing back. Artificial measures, such as the withholding of commodities from the market,—a policy which in itself is a confession of defeat and simply evidences the weakness of the market to buyers and thereby drives prices further down—cannot stay the swing.<sup>10</sup>

**Relationship of credit.**—Credit, i.e., commercial borrowing, never causes alternate periods of prosperity and depression. It merely magnifies their effects. An expansion of credit

<sup>8</sup> An unfortunate aspect of the present organization of industrial society wherein men seek primarily to "make money" rather than to promote the general welfare by contributing toward maximum productivity is illustrated at this point. Producers aim to undersupply rather than exactly meet the demand—an application of Gregory King's law, evolved centuries ago, that a short crop yields a larger return than a large crop. The total wheat production in the United States in 1915 was 1,025,801,000 bushels valued at \$942,303,000; in 1916—the following year—the crop was only 639,886,000 bushels but was valued at \$1,025,765,000. The production declined 38 per cent. but the value of the crop increased 11 per cent.

<sup>9</sup> Producer's goods are those used in the creation of commodities, e.g., machinery; whereas consumer's goods, such as clothing and foodstuffs, are those immediately and completely utilized.

<sup>10</sup> The attempt on the part of the agriculturists during the latter part of 1920 to withhold the current crops, especially cotton and wheat, from the market because of dissatisfaction with current prices, not only failed to strengthen prices, but actually caused prices to decline further.



permits profits to increase more rapidly by reason of facilitating the increase in production, but thereby shortens the period of increased activity. A curtailment of credit precipitates the downward price movement, and incidently the ensuing period of depression, which would be just as certain to occur when the supply met the demand, although less abruptly, if there were no such an institution as credit. Panics are credit phenomena; periods of prosperity and depression are not.

**Effect of changes in the demand.**—Demand is never stable; apart from other reasons, it fluctuates with changes in the supply, a condition which renders even more difficult the problem of regulating the supply. Because of this factor, the success met in the endeavor to make supply approach demand in a period of prosperity does not depend entirely upon increased production. At the outset the appreciation of a shortage further accentuates the demand; but toward the latter part of the period, when supply is rapidly increasing, demand is actually declining. Producers are operating at top speed and do not appreciate this fact at the proper time. The close of a period of prosperity, therefore, usually finds the rate of production still increasing with the demand rapidly falling off. These countermovements have a tendency to make the readjustment more drastic.

**Why depression ensues.**—The forces which cause prices to rise must eventually act in reverse manner to accomplish a decline as soon as equality between conditions of demand and supply is approached. The decline of prices should not, of itself, bring about a period of depression, as a restoration of the former price should still allow a reasonable margin of profit. But, as has previously been stated, production costs have advanced in the interim. The inability of producers promptly to adjust production costs, primarily wages,<sup>11</sup> to sales prices while prices are moving downward—perhaps they might accomplish this more readily if they were consistent when prices are rising—impels a radical curtailment of production. Another important reason for the adoption of this curtailment policy is to be found in a continuance of the decline in the

<sup>11</sup> An industrial survey conducted by *The New York Herald* in 1921 showed that labor received 85 cents out of every dollar of cost in steel making; 75 cents out of each dollar of cost in bituminous coal mining; 85 cents in building construction; 38 cents in ship building; 60 cents in railroading; 33 cents in furniture; 35 cents in shoe manufacturing; and 50 cents in textiles.—Cf. *The New York Herald*, May 8, 1921.

demand already evidenced toward the close of the period of prosperity but gaining in intensity as prices lower.

The curtailment of industrial activity is synonymous with a period of business depression. Decreased productivity means unemployment and lower wages, in short, decreased purchasing power, which tends further to weaken the situation and to prolong the period of depression. As in a period of rising prices, an incorrect estimate of demand causes overproduction; just so in a period of falling prices an incorrect estimate of demand causes underproduction. Production may be postponed, but consumption, particularly of the necessities of life, continues constantly. Underproduction eventually causes a shortage to exist, and as this shortage becomes apparent, the instinct of wanting what cannot be had takes hold, demand quickens, more so because certain wants have been postponed, and the upward swing begins.

Summary.—Alternate periods of prosperity and depression are money phenomena. Because of the dominance of an economy of money, production and distribution, which should be the most cogent factors in business, are subordinated to price and profit, both of which are money terms. The prosperity of a country should depend upon its production of goods, and as long as an adequacy is provided, prosperity should continue. But the existing economy of money requires that the prosperity of each individual be measured in the adequacy of money he possesses rather than of goods he produces. Hence, a nation comprises a body of individuals each seeking an adequacy of money rather than of goods. Were money-making predicated upon productivity, an adequacy of money would presuppose an adequacy of goods. But money-making, as the dominant influence, as often as not accomplishes the opposite result. The obligation of producers to regulate supply in accordance with the demand—that profit may be derived—exemplifies an unfortunate effect of a money economy.<sup>12</sup>

Under the influence of the money economy, producers are obliged to consider money-making, which represents prosperity to them as individuals, before maximum productivity which means prosperity to the community. Because of this, a con-

<sup>12</sup> "In the world of reality we have insatiable wants to deal with, and an unusable surplus of all things can never be produced. An *unsaleable* surplus of *many* things can be produced."—"Introduction to Rodbertus' Overproduction and Crises," by John B. Clark, p. 3.



stant endeavor is made to regulate production with the estimated demand in such manner as to derive the largest profit. Prosperity of producers, therefore, is not dependent upon their capacity to produce, which should be the basis from the standpoint of the community welfare, but upon their cleverness in regulating production.

The regulation of production is a problem in compound forecasting to which an erroneous solution creates a maladjustment of supply and demand. The lack of balance has resulted from an inaccurate forecast of the demand or of the effect of physical limitations upon the production of the desired supply. The chief difficulty is in the predetermination of the demand as it is easier—comparatively so only—to regulate the supply in accordance. Supply must always be handmaid to demand, a most fickle mistress. The principal error in the predetermination of demand is the failure of producers fully to appreciate that business conditions are never static. Yesterday's experience is a fair criterion of to-morrow's demand only when qualified by the developments in the meantime.<sup>13</sup>

<sup>13</sup> If we trust to history, then, the answer seems to be that the cyclical movement is part and parcel of the *normal* system of industry. If we ask economic theory for an explanation of why this should be so, the answer seems clear. The outstanding feature of modern industry is the division of labour. This division of labour has three consequences. The first is that, as the value of all products depends on a demand outside and independent of the maker—no man "makes" value, but only things to which value is attached by the desires and purchasing power of others—the individuals of the community are daily perilling their resources on the chance of finding a paying demand from other people for their goods, while, all the time, there is any number of causes acting on this demand, increasing, diminishing, or, it may be, totally extinguishing it. What is more, every advance in wealth and culture tends to make this demand more capricious, and, with every change in demand, some industry or other goes on short time. For, while the simple wants of a poor community may be fairly counted on to produce a steady demand, the desires and activities of a wealthy community are infinitely varied and constantly changing, and every such change affects a long chain of industries in which huge capitals are specialised and literally "sunk," and thousands of labourers are employed.

The second is that every industry depends for its smooth working on other industries. The production of any and every good which man consumes being divided up into many successive and complementary industries, every individual industry depends, first, on getting the supply of things necessary for its operations from a preceding industry; and second, on its products being taken up by the succeeding industries which carry them one stage nearer to the final good which people demand for a living. The drop of a single link in the long chain causes dislocation in every trade which connects the first raw material obtained from the earth with the finished article sold across the counter. And this danger of dislocation is the greater, the more highly "manufactured" the article is.

The third is that every industry depends on purchasing power obtained from other industries. If any trade, either because of dislocation of supply or change of demand, goes on short time, the loss of purchasing power on the part of its members at once affects the shops, and to that extent puts the shops, and through them the factories, the farms, and the carrying trade which fill the shops, on short time, and the diminished purchasing power of such shops, factories, farms, and carrying trades in turn affects other industries, and so on *ad infinitum*.

The third, and to some extent the second, of these explains the phenomena of industrial contagion, and contagion explains the cyclical movement. That depression breeds depression has often been noticed, and is easily understood once it is realised that "contagion" is more than a mere metaphor—the *virus* is diminished purchasing power transmitted from pocket to pocket. It has not been so much noticed that in industry there is a contagion of health as well as a contagion of disease. When the depression has run its course, and the cycle begins the upward movement, the healthy current of added purchasing power acts in precisely the same way, spreading activity through the shops to the farms, the factories, and the carrying trades. The only thing that still remains obscure is how the reaction from depression begins. As a rule, it comes so gradually that the beginnings are already beyond record when it is ascertained that "trade is on the turn." As a matter of theory, an abundant harvest—particularly if it be international—would make the new start, for such a harvest is a spontaneous gift of heaven, and fills the farmers' pockets with new purchasing power.—"Economic Annals of the Nineteenth Century," 1801-1820, William Smart, p. 607.

PART II  
THE BAROMETERS OF BUSINESS



## CHAPTER V

### BAROMETERS OF AGRICULTURE

The barometers of production.—Productivity may be arbitrarily divided into three classes: agricultural, or organic; industrial, or inorganic; and structural. Agricultural productivity may be measured in terms of the principal crops: corn, wheat, and cotton. Industrial productivity may be gauged from the output of pig iron and bituminous coal, the unfilled orders of the United States Steel Corporation, and the imports of the chief raw materials used in production: raw silk, hides, rubber, wool, fibres, and tin. Structural activity may be estimated from the value of building permits issued in leading cities.

**Agricultural production.**—The first and most important class of production is agriculture. Farm production affects the purchasing power of the largest single body of workers in the country, the cost of the principal raw materials consumed in manufacturing,<sup>1</sup> and the earnings of many important railroad companies. According to the census of 1910, in the United States 12,659,203 persons were directly engaged in agriculture, and comprised 32.5 per cent. of the number of persons engaged in all occupations.<sup>2</sup> The value of the products of the farm has steadily increased from approximately \$5,000,000,-

<sup>1</sup>The sources of materials used in United States manufactures in 1899, 1904, 1909, and 1914, is shown in the following tabulation compiled from Table No. 138 in the "Statistical Abstract of the United States for 1920" (in millions of dollars):

| Products of the Farm:                  | 1899         | 1904         | 1909         | 1914         |
|----------------------------------------|--------------|--------------|--------------|--------------|
| Food and kindred products.....         | 1,780        | 2,300        | 3,190        | 3,830        |
| Textiles .....                         | 900          | 1,250        | 1,750        | 2,000        |
| Leather and its finished products..... | 400          | 480          | 670          | 750          |
| Liquors and beverages.....             | 90           | 140          | 190          | 250          |
| Chemicals and allied products.....     | 180          | 250          | 360          | 520          |
| Tobacco manufactures .....             | 90           | 130          | 180          | 210          |
| Miscellaneous industries .....         | 110          | 150          | 220          | 300          |
| <b>Total farm products.....</b>        | <b>3,550</b> | <b>4,700</b> | <b>6,560</b> | <b>7,860</b> |



000 in 1900 to about \$25,000,000,000 in 1919. Prices were abnormally high during the later year, however, as is evidenced by the estimate of \$20,000,000,000 for 1920. These totals include both crops and animal products in the average proportion of 65 and 35 respectively.<sup>3</sup>

The cost of all materials used in manufacturing in the United States in 1914 was \$14,368,089,000. Of this amount, \$7,860,000,000 or about 55 per cent, comprised products of the farm.<sup>4</sup> As cost of material is an important element in production cost, the influence of agriculture upon industry is plainly discernible.<sup>5</sup>

The third major influence of agricultural production is upon railroad earnings. Products of agriculture, excluding live stock, contribute one-tenth of the revenue freight tonnage of

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Products of the Forest:

|                                       |     |       |       |       |
|---------------------------------------|-----|-------|-------|-------|
| Lumber and its finished products..... | 480 | 520   | 720   | 760   |
| Paper and printing.....               | 210 | 310   | 450   | 580   |
| Vehicles for land transportation..... | 153 | 180   | 250   | 275   |
| Railroad repair shops.....            | 35  | 50    | 70    | 80    |
| Miscellaneous industries .....        | 110 | 150   | 220   | 300   |
| Total forest products.....            | 988 | 1,210 | 1,710 | 1,995 |

Products of the Mine:

|                                        |       |       |       |       |
|----------------------------------------|-------|-------|-------|-------|
| Iron and steel and their products..... | 1,000 | 1,200 | 1,800 | 1,760 |
| Chemicals and allied products.....     | 270   | 325   | 540   | 780   |
| Stone, clay, and glass products.....   | 85    | 120   | 180   | 240   |
| Metals, other than iron and steel..... | 470   | 630   | 890   | 1,020 |
| Vehicles for land transportation.....  | ...   | ...   | 60    | 315   |
| Railroad repair shops.....             | 75    | 100   | 140   | 160   |
| Miscellaneous industries .....         | 110   | 150   | 220   | 300   |

|                          |       |       |       |       |
|--------------------------|-------|-------|-------|-------|
| Total mine products..... | 2,010 | 2,525 | 3,830 | 4,610 |
|--------------------------|-------|-------|-------|-------|

|                   |       |       |        |        |
|-------------------|-------|-------|--------|--------|
| Grand total ..... | 6,538 | 8,435 | 12,100 | 14,430 |
|-------------------|-------|-------|--------|--------|

|                                  |       |       |       |       |
|----------------------------------|-------|-------|-------|-------|
| Percentage of farm products..... | 54.1% | 55.7% | 54.2% | 54.5% |
|----------------------------------|-------|-------|-------|-------|

<sup>3</sup> "Statistical Abstract of the United States," 1920, p. 798.

<sup>4</sup> *Monthly Crop Reporter*, January, 1921, p. 3.

<sup>5</sup> "Statistical Abstract of the United States," 1920, p. 193.

<sup>6</sup> The relationship of the cost of materials to the total value of manufactured products appears to be the subject of no little misapprehension. In "Business Cycles" (p. 481), Mitchell states: "According to the preceding table, the cost of materials exceeds wages in every one of the leading branches of manufacture, and in a majority of cases is over twice as large. Indeed, on the average it makes practically two-thirds of the total outlay." This would create the impression that the outlay for materials is greatly in excess of that for wages and other expenses in manufacturing—a condition which is true in many individual industries but which is not true for industry as a whole since the cost of ma-

the American railroads. For the western roads, the proportion is nearer one-fifth.<sup>6</sup>

In addition to the direct influence of agricultural production upon general conditions, an even greater indirect effect is derived. Increased purchasing power of agricultural workers stimulates industrial production to meet the augmented demand for its products. Large crops require greater transportation facilities and encourage the carriers to place orders for new

materials to one manufacturer includes wages and other expenses paid at a preceding stage. In the "Twelfth Census of the United States, Manufactures," Part I, p. cxxv, from which Mitchell derives his table, the total cost of manufactures was reported as follows:

|                                      |                  |        |
|--------------------------------------|------------------|--------|
| Raw materials .....                  | \$2,389,000,000  |        |
| Semi-finished materials .....        | 4,633,000,000    |        |
| Fuel, freight, etc. ....             | 322,000,000      |        |
| <hr/>                                |                  |        |
| Total cost of materials .....        | \$7,345,000,000  | 66.2%  |
| <hr/>                                |                  |        |
| Salaries .....                       | \$404,000,000    |        |
| Wages .....                          | 2,322,000,000    |        |
| <hr/>                                |                  |        |
| Total salaries and wages .....       | \$2,726,000,000  | 24.5%  |
| <hr/>                                |                  |        |
| Rent of works .....                  | \$96,000,000     |        |
| Taxes .....                          | 47,000,000       |        |
| Rent of office, insurance, etc. .... | 714,000,000      |        |
| Contract work .....                  | 171,000,000      |        |
| <hr/>                                |                  |        |
| Total miscellaneous .....            | \$1,028,000,000  | 9.3%   |
| <hr/>                                |                  |        |
| Grand total cost .....               | \$11,099,000,000 | 100.0% |

If the analysis is not carried further, it would appear that the cost of materials consumes 66.2 per cent of the total cost, as quoted by Mitchell. But the item of \$4,633,000,000 listed as the cost of semi-finished materials duplicates a substantial part of the value of raw materials, labor, and other expenses shown in the tabulation. A revised table with this duplication eliminated is appended:

|                          |                 |        |
|--------------------------|-----------------|--------|
| Raw materials .....      | \$2,389,000,000 | 36.9%  |
| Fuel, freight, etc. .... | 322,000,000     | 4.9    |
| Salaries and wages ..... | 2,726,000,000   | 42.1   |
| Miscellaneous .....      | 1,028,000,000   | 16.1   |
| <hr/>                    |                 |        |
| Net cost .....           | \$6,465,000,000 | 100.0% |

The net cost of materials therefore comprised but 36.9 per cent of the net manufacturing cost rather than 66.2 per cent. The foregoing figures apply to the manufacturing year 1899. Unfortunately later figures are not available but there is reason to believe that substantially the same results would be obtainable from an analysis of manufacturing costs in 1910 and 1920.

<sup>6</sup> "Statistics of Railways in the United States," 1918, p. 39.

equipment which find reflection in purchases of iron and steel products. Directly and indirectly, the volume of agricultural production tends to dominate commercial activity. Other forms of industrial effort are regulated largely in accordance with the harvests.<sup>7</sup>

**Government crop reports.**—Current agricultural productivity can be most satisfactorily measured from the monthly reports of the Bureau of Crop Estimates of the Department of Agriculture. Domestic production only is estimated, but estimates of foreign crops are reported as compiled abroad.

The crop reports are issued during the growing season. The first report gives the acreage planted and the last report the estimated production; the intermediate reports give the condition of the crop from month to month. Condition is reported as a certain percentage of a "normal." For instance, on May 9, 1921, the condition of winter wheat in the United States was estimated at 88.8 per cent. of "normal." The term "normal" is likely to be confusing unless properly understood. It is not the maximum productivity obtainable, nor is it the average for a preceding series of years. It is what the yield may reasonably be expected to be if the growing season is favorable which means not unusually good nor unusually bad.<sup>8</sup>

While the Department forecasts the yield upon the basis of normal growing conditions up to the time of harvest, no attempt is made to predetermine actual conditions which will naturally cause the yield to be greater or less than anticipated.

<sup>7</sup> "Crops affect business by: (1) directly determining the ability of the farmer to buy factory products, his annual purchasing power through crops amounting to about \$9,000,000,000; (2) by indirectly determining the amount of merchandise which persons employed in manufacturing and mercantile lines and all other non-agricultural pursuits can purchase, for if they must pay high prices for food there will be less to spend for merchandise, and *vice versa*; (3) by determining the earnings of the railroads, for railroad traffic largely consists in hauling farm products or merchandise to be exchanged for farm products, and since the crops largely determine the ability of the railroads to buy new equipment and make improvements, it follows that crops thus indirectly determine the degree of prosperity in the iron and steel business, which is the basic industry of the country. Thus it is evident that activity in transportation, iron and steel, hardware, textiles and all other lines of business finds its stimulative source—its fountain-head—in the agricultural harvests of the country. Prosperity fundamentally depends upon the condition of the soil, and the business men of this country always adjust their commercial commitments to the prospects of the harvests to a greater extent than to any other one factor."—"Financial Forecasting," by James H. Brookmire, in *Moody's Magazine*, July, 1913, p. 19.

<sup>8</sup> "It is neither a maximum possible or even a bumper crop, which occurs only at rare intervals when conditions are exceedingly favorable, nor a medium or

**Dates of issuance.**—The monthly estimates of the Department of Agriculture are usually issued between the seventh and tenth day of each month and give the condition of the various crops as of the first of the month. An exception is made in the case of cotton, on which the report is issued on the first of the month and gives the condition as of the twenty-fifth of the preceding month.

Reports on the condition of the crops begin in April when the condition of winter wheat and rye is given. The May report likewise gives the condition of winter wheat and rye, and the acreage originally planted to winter wheat which has been abandoned. The June report covers the acreage planted to spring wheat and oats; and the condition of wheat, oats, barley, rye, clover, spring pastures, apples, peaches and rice. The July report gives the acreage planted to corn, potatoes, tobacco and sugar cane; and the condition of the principal crops. The August report gives the yield of winter wheat; and the condition of the other crops. The September report gives the condition at harvest time of spring wheat, oats, barley and rye; as well as the condition of the other crops. The October report gives the yield of spring wheat, barley, oats, and rye; and the condition of corn, potatoes, sugar cane, tobacco, and rice. The November report gives the yield of corn, potatoes, hay, tobacco and rice. The December report gives the production and farm prices of the principal crops; the acreage sown to winter wheat and rye for the following year; and the condition of winter wheat and rye.

**Agricultural production: Corn.**—Corn is the most valuable agricultural product in the United States. The average pre-war world production of corn from 1909 to 1913 inclusive was 3,881,263,000 bushels of which this country supplied

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small crop grown upon one or more adverse conditions. Neither is it an average crop, which rarely occurs because of the effect on the average of extremely low or extremely high yields in exceptional seasons. It is rather the typical crop represented by the average of a series of good crops, leaving out of consideration altogether the occasional bumper crop and the more or less frequent partial crop failure. This expected yield at planting time, the full crop that the farmer has in mind when he thinks of the yield he expects to harvest, or the typical crop represented by the average of good crops only, is the "normal," or standard adopted by this bureau for expressing condition during the growing season and yield at harvest time."—"Government Crop Reports," Circular 17, Revised, p. 20.

2,708,334,000 bushels.<sup>9</sup> The chief value of corn is as fodder for livestock, and for this reason, practically the entire crop is consumed where it is grown, as only 20 per cent moves out of the producing counties.

TABLE No. 9.—CORN: CONDITION OF CROP, UNITED STATES, ON FIRST OF MONTHS NAMED, 1900-1921\*

| <i>Year</i> | <i>July</i><br><i>Per cent</i> | <i>August</i><br><i>Per cent</i> | <i>September</i><br><i>Per cent</i> | <i>October</i><br><i>Per cent</i> |
|-------------|--------------------------------|----------------------------------|-------------------------------------|-----------------------------------|
| 1900 .....  | 89.5                           | 87.5                             | 80.6                                | 78.2                              |
| 1901 .....  | 81.3                           | 54.0                             | 51.7                                | 52.1                              |
| 1902 .....  | 87.5                           | 86.5                             | 84.3                                | 79.6                              |
| 1903 .....  | 79.4                           | 78.7                             | 80.1                                | 80.8                              |
| 1904 .....  | 86.4                           | 87.3                             | 84.6                                | 83.9                              |
| 1905 .....  | 87.3                           | 89.0                             | 89.5                                | 89.2                              |
| 1906 .....  | 87.5                           | 88.0                             | 90.2                                | 90.1                              |
| 1907 .....  | 80.2                           | 82.8                             | 80.2                                | 78.0                              |
| 1908 .....  | 82.8                           | 82.5                             | 79.4                                | 77.8                              |
| 1909 .....  | 89.3                           | 84.4                             | 74.6                                | 73.8                              |
| 1910 .....  | 85.4                           | 79.3                             | 78.2                                | 80.3                              |
| 1911 .....  | 80.1                           | 69.6                             | 70.3                                | 70.4                              |
| 1912 .....  | 81.5                           | 80.0                             | 82.1                                | 82.2                              |
| 1913 .....  | 86.9                           | 75.8                             | 65.1                                | 65.3                              |
| 1914 .....  | 85.8                           | 74.8                             | 71.7                                | 72.9                              |
| 1915 .....  | 81.2                           | 79.5                             | 78.8                                | 79.7                              |
| 1916 .....  | 82.0                           | 75.3                             | 71.3                                | 71.5                              |
| 1917 .....  | 81.1                           | 78.8                             | 76.7                                | 75.9                              |
| 1918 .....  | 87.1                           | 78.5                             | 67.4                                | 68.6                              |
| 1919 .....  | 86.7                           | 81.7                             | 80.0                                | 81.3                              |
| 1920 .....  | 84.6                           | 86.7                             | 86.4                                | 89.1                              |
| 1921 .....  | 91.1                           | 84.3                             | 85.1                                | 84.8                              |

\* From "Yearbook of the Department of Agriculture," 1920, Separate No. 861, p. 11.

Government statistics on corn production are included in the reports for the following months and contain the information stated:

July—Acreage, condition.

August—Condition.

September—Condition.

October—Condition.

November—Production (preliminary).

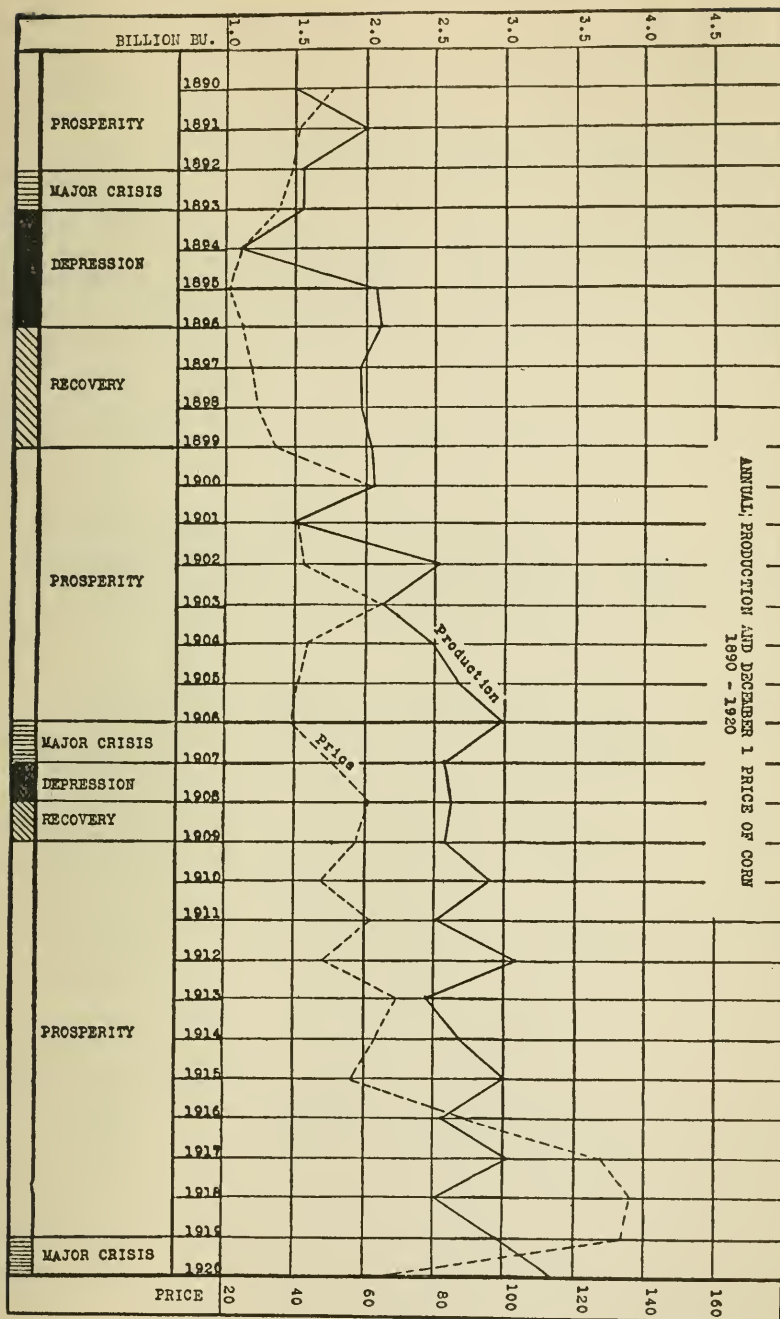
December—Production, acreage, value (final).

The condition of the corn crop on the first of the months named in the period 1900-1921 was reported by the Department of Agriculture as shown in Table No. 9.

<sup>9</sup> "Yearbook of the Department of Agriculture," 1920. Separate No. 861, p. 4.



CHART II.—ANNUAL PRODUCTION AND DEC. 1 PRICE OF CORN: 1890-1920.





For the eleven year period from 1909 to 1919, the extent and causes of yearly corn crop losses averaged as follows:

TABLE No. 10.—EXTENT AND CAUSES OF YEARLY CORN CROP LOSS DURING THE PERIOD FROM 1909 TO 1919\*

|                          | <i>Per cent</i> |                      | <i>Per cent</i> |
|--------------------------|-----------------|----------------------|-----------------|
| Deficient moisture ..... | 16.3            | Plant disease .....  | 0.2             |
| Excessive moisture ..... | 4.0             | Insect pests .....   | 2.7             |
| Floods .....             | 0.9             | Animal pests .....   | 0.2             |
| Frost or freeze.....     | 2.9             | Defective seed ..... | 0.7             |
| Hail .....               | 0.4             |                      |                 |
| Hot winds .....          | 2.2             | Grand total .....    | 31.0            |
| Storms .....             | 0.5             |                      |                 |
| Total climatic .....     | 27.2            |                      |                 |

\* From "Yearbook of the Department of Agriculture," 1920, Separate No. 861, p. 12.

The corn crop of the United States is harvested chiefly during September, October, and November. Almost one-half of the crop is harvested in November. The percentage harvested in each month is shown in Table No. 11.

TABLE No. 11.—PERCENTAGE OF THE CORN CROP OF THE UNITED STATES HARVESTED MONTHLY\*

|                 | <i>Per cent</i> |
|-----------------|-----------------|
| June .....      | 0.1             |
| July .....      | 0.1             |
| August .....    | 1.5             |
| September ..... | 15.8            |
| October .....   | 28.3            |
| November .....  | 43.3            |
| December .....  | 10.9            |
| Total .....     | 100.0           |

\* "Yearbook of the Department of Agriculture," 1919, p. 727.

The production, acreage, and value of the corn crop of the United States for the period from 1900 to 1920 inclusive is stated in Table No. 12.

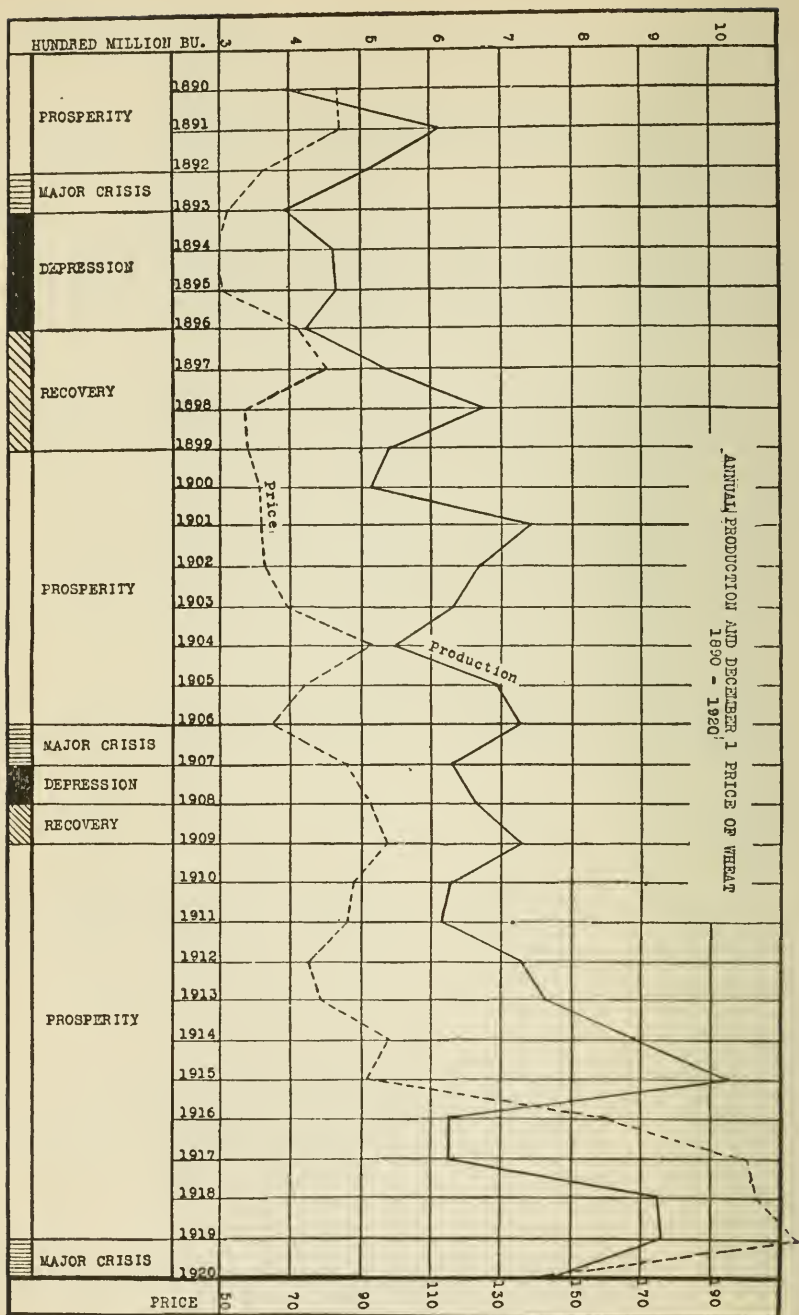
Agricultural production: Wheat.—The United States produces about 25 per cent of the total world production of wheat. The average yearly pre-war production from 1909 to 1913 inclusive was 3,573,947,000 bushels of which this country contributed 686,961,000. The important wheat-growing countries of the world, based upon production and

TABLE NO. 12.—CORN: ACREAGE, PRODUCTION, VALUE, EXPORTS, ETC., IN THE UNITED STATES, 1900-1920\*

| Year.     | Acreage<br>(000<br>omitted) | Aver-<br>age<br>yield<br>per<br>acre. | Produc-<br>tion<br>(000<br>omitted). | Aver-<br>age<br>farm<br>price<br>per<br>bushel<br>Dec. 1. | Farm<br>value<br>Dec. 1<br>(000<br>omitted). | Chicago cash price per bushel,<br>contract. |       |                   |       |             |            | Domestic<br>exports,<br>including<br>corn meal,<br>fiscal<br>year begin-<br>ning July 1. | Imports<br>during<br>fiscal<br>year<br>beginning<br>July 1. | Per<br>cent<br>of<br>crop<br>ex-<br>port-<br>ed. |
|-----------|-----------------------------|---------------------------------------|--------------------------------------|-----------------------------------------------------------|----------------------------------------------|---------------------------------------------|-------|-------------------|-------|-------------|------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------------------------------------|
|           |                             |                                       |                                      |                                                           |                                              | December.                                   |       | Following<br>May. |       |             |            |                                                                                          |                                                             |                                                  |
|           |                             |                                       |                                      |                                                           |                                              | Low.                                        | High. | Low.              | High. | Low.        | High.      |                                                                                          |                                                             |                                                  |
|           |                             |                                       |                                      |                                                           |                                              |                                             |       |                   |       |             |            |                                                                                          |                                                             |                                                  |
| Acre.     | Bush.                       | Bushels.                              | Cents.                               | Dollars.                                                  | Cts.                                         | Cts.                                        | Cts.  | Cts.              | Cts.  | Bushels.    | Bushels.   | P. ct.                                                                                   |                                                             |                                                  |
| 1900..... | 83,321                      | 25.3                                  | 2,105,103                            | 35.7                                                      | 751,220                                      | 35¼                                         | 40½   | 42½               | 58½   | 181,405,473 | 5,169      | 8.6                                                                                      |                                                             |                                                  |
| 1901..... | 91,350                      | 16.7                                  | 1,522,520                            | 60.5                                                      | 921,556                                      | 62½                                         | 67½   | 59½               | 64¾   | 28,028,688  | 18,278     | 1.8                                                                                      |                                                             |                                                  |
| 1902..... | 94,044                      | 26.8                                  | 2,523,648                            | 40.3                                                      | 1,017,017                                    | 43¾                                         | 57¼   | 44                | 46    | 76,639,261  | 40,919     | 3.0                                                                                      |                                                             |                                                  |
| 1903..... | 88,092                      | 25.5                                  | 2,244,177                            | 42.5                                                      | 952,869                                      | 41                                          | 43¾   | 47¼               | 50    | 58,222,061  | 16,633     | 2.6                                                                                      |                                                             |                                                  |
| 1904..... | 92,232                      | 26.8                                  | 2,467,481                            | 44.1                                                      | 1,087,461                                    | 43½                                         | 49    | 48                | 64½   | 90,293,483  | 15,443     | 3.7                                                                                      |                                                             |                                                  |
| 1905..... | 94,011                      | 28.8                                  | 2,707,994                            | 41.2                                                      | 1,116,697                                    | 42                                          | 50¼   | 47½               | 50    | 119,893,833 | 10,127     | 4.4                                                                                      |                                                             |                                                  |
| 1906..... | 96,738                      | 30.3                                  | 2,927,416                            | 39.9                                                      | 1,166,626                                    | 40                                          | 46    | 49½               | 56    | 86,368,228  | 10,818     | 3.0                                                                                      |                                                             |                                                  |
| 1907..... | 99,931                      | 25.9                                  | 2,592,320                            | 51.6                                                      | 1,336,901                                    | 57½                                         | 61½   | 67¾               | 82    | 55,063,860  | 20,312     | 2.1                                                                                      |                                                             |                                                  |
| 1908..... | 101,788                     | 26.2                                  | 2,668,651                            | 60.6                                                      | 1,616,145                                    | 56¾                                         | 62¼   | 72¼               | 76    | 37,665,040  | 258,065    | 1.4                                                                                      |                                                             |                                                  |
| 1909..... | 98,383                      | 25.9                                  | 2,552,190                            | 57.9                                                      | 1,477,222                                    | 62½                                         | 66    | 56                | 63    | 38,128,498  | .....      | 1.5                                                                                      |                                                             |                                                  |
| 1910..... | 104,035                     | 27.7                                  | 2,886,260                            | 48.0                                                      | 1,384,817                                    | 45½                                         | 50    | 52¼               | 55¼   | 65,614,522  | .....      | 2.3                                                                                      |                                                             |                                                  |
| 1911..... | 105,825                     | 23.9                                  | 2,531,488                            | 61.8                                                      | 1,565,258                                    | 68                                          | 70    | 76¼               | 82½   | 41,797,291  | 53,425     | 1.7                                                                                      |                                                             |                                                  |
| 1912..... | 107,083                     | 29.2                                  | 3,124,746                            | 48.7                                                      | 1,520,454                                    | 47½                                         | 54    | 55¼               | 60    | 50,780,143  | 903,062    | 1.6                                                                                      |                                                             |                                                  |
| 1913..... | 105,820                     | 23.1                                  | 2,446,988                            | 69.1                                                      | 1,692,092                                    | 64                                          | 73¾   | 67                | 72½   | 10,725,819  | 12,367,369 | .4                                                                                       |                                                             |                                                  |
| 1914..... | 103,435                     | 25.8                                  | 2,672,804                            | 64.4                                                      | 1,722,070                                    | 62¼                                         | 68¼   | 50½               | 56    | 50,668,303  | 9,897,939  | 1.9                                                                                      |                                                             |                                                  |
| 1915..... | 106,197                     | 28.2                                  | 2,994,793                            | 57.5                                                      | 1,722,680                                    | 69½                                         | 75    | 69                | 78½   | 39,896,928  | 5,208,497  | 1.3                                                                                      |                                                             |                                                  |
| 1916..... | 105,296                     | 24.4                                  | 2,566,927                            | 88.9                                                      | 2,280,729                                    | 88                                          | 96    | 152               | 174   | 66,753,294  | 2,267,299  | 2.6                                                                                      |                                                             |                                                  |
| 1917..... | 116,730                     | 26.3                                  | 3,065,233                            | 127.9                                                     | 3,920,228                                    | 160                                         | 190   | 150               | 170   | 49,073,263  | 3,196,420  | 1.6                                                                                      |                                                             |                                                  |
| 1918..... | 104,467                     | 24.0                                  | 2,502,665                            | 136.5                                                     | 3,416,240                                    | 135                                         | 155   | 160½              | 185   | 23,018,822  | 3,311,211  | .9                                                                                       |                                                             |                                                  |
| 1919..... | 100,072                     | 28.6                                  | 2,858,509                            | 134.7                                                     | 3,851,741                                    | 142                                         | 160   | 189               | 217   | 16,707,447  | 10,229,249 | .6                                                                                       |                                                             |                                                  |
| 1920..... | 104,601                     | 30.9                                  | 3,232,367                            | 67.7                                                      | 2,189,721                                    | 70¾                                         | 86    | .....             | ..... | .....       | .....      | .....                                                                                    |                                                             |                                                  |

\* From "Yearbook of the Department of Agriculture," 1920, Separate No. 861, p. 6.

CHART III.—ANNUAL PRODUCTION AND DEC. 1 PRICE OF WHEAT: 1890-1920.



volume of exports, for the pre-war period 1909-1913 were as follows:

TABLE No. 13.—PRODUCTION AND EXPORTATION OF WHEAT, 1909-1913\*

| <i>Country</i>       | <i>Average<br/>production</i> | <i>Average<br/>exports</i> |
|----------------------|-------------------------------|----------------------------|
| United States .....  | 686,691,000                   | 100,310,000                |
| Russia proper .....  | 522,794,000                   | 161,766,000                |
| British India .....  | 350,736,000                   | 51,510,000                 |
| France .....         | 317,254,000                   | .....                      |
| Canada .....         | 197,119,000                   | 90,871,000                 |
| Italy .....          | 183,260,000                   | .....                      |
| Argentina .....      | 157,347,000                   | 95,243,000                 |
| Hungary proper ..... | 156,523,000                   | .....                      |
| Germany .....        | 152,119,000                   | 21,149,000                 |
| Spain .....          | 130,446,000                   | .....                      |
| Australia .....      | 84,943,000                    | 49,732,000                 |

\* Compiled from "Yearbook of the Department of Agriculture," 1920, Separate No. 861, pp. 16-32.

Government reports on wheat.—Government reports on wheat production are issued in the following months and contain the information stated:

| <i>Month</i>    | <i>Winter wheat</i>                                                                                           | <i>Spring wheat</i>                                          |
|-----------------|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| April .....     | Condition                                                                                                     | .....                                                        |
| May .....       | Condition<br>Acreage abandoned                                                                                | .....                                                        |
| June .....      | Condition                                                                                                     | Acreage planted<br>Condition                                 |
| July .....      | Condition                                                                                                     | Condition                                                    |
| August .....    | Production<br>Quality                                                                                         | Condition                                                    |
| September ..... | .....                                                                                                         | Condition                                                    |
| October .....   | .....                                                                                                         | Production                                                   |
| December .....  | (Old crop)<br>Final estimate:<br>acreage<br>production<br>value<br>(New crop)<br>Acreage planted<br>Condition | Quality<br>Final estimate:<br>acreage<br>production<br>value |

The wheat harvest in the countries of the northern hemisphere occurs between May and September while in the

southern hemisphere—notably Argentina and Australia—the harvest months are from January to March. The British India crop is harvested in March. Yet wheat production is so widespread that the crop is being harvested in each of the twelve months in some part of the world. In the United States, the harvest begins in May in southern Texas and then advances north until it finally closes in the Dakotas in October.

The condition of the wheat crop on the first of the months named in the period 1900-1920 was reported by the Department of Agriculture as shown in Table No. 14.

TABLE No. 14.—WINTER AND SPRING WHEAT: CONDITION OF CROP, UNITED STATES, ON FIRST OF MONTHS NAMED, 1900-1920\*

| Year.     | Winter Wheat.                              |             |             |             |                         | Spring Wheat. |             |             |                         |
|-----------|--------------------------------------------|-------------|-------------|-------------|-------------------------|---------------|-------------|-------------|-------------------------|
|           | De-<br>cember<br>of pre-<br>vious<br>year. | April.      | May.        | June.       | When<br>har-<br>vested. | June.         | July.       | Aug.        | When<br>har-<br>vested. |
| 1900..... | P. ct. 97.1                                | P. ct. 82.1 | P. ct. 88.9 | P. ct. 82.7 | P. ct. 80.8             | P. ct. 87.3   | P. ct. 55.2 | P. ct. 56.4 | P. ct. 56.1             |
| 1901..... | 97.1                                       | 91.7        | 94.1        | 87.8        | 88.3                    | 92.0          | 95.6        | 80.3        | 78.4                    |
| 1902..... | 86.7                                       | 78.7        | 76.4        | 76.1        | 77.0                    | 95.4          | 92.4        | 89.7        | 87.2                    |
| 1903..... | 99.7                                       | 97.3        | 92.6        | 82.2        | 78.8                    | 95.9          | 82.5        | 77.1        | 78.1                    |
| 1904..... | 86.6                                       | 76.5        | 76.5        | 77.7        | 78.7                    | 93.4          | 93.7        | 87.5        | 66.2                    |
| 1905..... | 82.9                                       | 91.6        | 92.5        | 85.5        | 82.7                    | 93.7          | 91.0        | 89.2        | 87.3                    |
| 1906..... | 94.1                                       | 89.1        | 90.9        | 82.7        | 85.6                    | 93.4          | 91.4        | 86.9        | 83.4                    |
| 1907..... | 94.1                                       | 89.9        | 82.9        | 77.4        | 78.3                    | 88.7          | 87.2        | 79.4        | 77.1                    |
| 1908..... | 91.1                                       | 91.3        | 89.0        | 86.0        | 80.6                    | 95.0          | 89.4        | 80.7        | 77.6                    |
| 1909..... | 85.3                                       | 82.2        | 83.5        | 80.7        | 82.4                    | 95.2          | 92.7        | 91.6        | 88.6                    |
| 1910..... | 95.8                                       | 80.8        | 82.1        | 80.0        | 81.5                    | 92.8          | 61.6        | 61.0        | 63.1                    |
| 1911..... | 82.5                                       | 83.3        | 86.1        | 80.4        | 76.8                    | 94.6          | 73.8        | 59.8        | 56.7                    |
| 1912..... | 86.6                                       | 80.6        | 79.7        | 74.3        | 73.3                    | 95.8          | 89.3        | 90.4        | 90.8                    |
| 1913..... | 93.2                                       | 91.6        | 91.9        | 83.5        | 81.6                    | 93.5          | 73.8        | 74.1        | 75.3                    |
| 1914..... | 97.2                                       | 95.6        | 95.9        | 92.7        | 94.1                    | 95.5          | 92.1        | 75.5        | 68.0                    |
| 1915..... | 88.3                                       | 88.8        | 92.9        | 85.8        | 84.4                    | 94.9          | 93.3        | 93.4        | 94.6                    |
| 1916..... | 87.7                                       | 78.3        | 82.4        | 73.2        | 75.7                    | 88.2          | 89.0        | 63.4        | 48.6                    |
| 1917..... | 85.7                                       | 63.4        | 73.2        | 70.9        | 75.9                    | 91.6          | 83.6        | 68.7        | 71.2                    |
| 1918..... | 79.3                                       | 78.6        | 86.4        | 83.8        | 79.5                    | 95.2          | 86.1        | 79.6        | 82.1                    |
| 1919..... | 98.6                                       | 99.8        | 100.5       | 94.9        | 89.0                    | 91.2          | 80.9        | 53.9        | 48.5                    |
| 1920..... | 85.2                                       | 75.6        | 79.1        | 78.2        | 79.7                    | 89.1          | 88.0        | 73.4        | 64.1                    |
| 1921..... | 87.9                                       | 91.0        | 88.8        | 77.9        | 77.2                    | 93.4          | 80.8        | 66.6        | 62.5                    |

\* "Yearbook of the Department of Agriculture," 1920, Separate No. 861, p. 25.

For the eleven-year period, 1909-1919, the extent and causes of the yearly wheat crop losses averaged as follows:

TABLE No. 15.—EXTENT AND CAUSES OF YEARLY WHEAT CROP LOSS DURING THE PERIOD FROM 1909 TO 1919\*

|                          | <i>Per cent</i> |                      | <i>Per cent</i> |
|--------------------------|-----------------|----------------------|-----------------|
| Deficient moisture ..... | 12.4            | Plant diseases ..... | 2.7             |
| Excessive moisture ..... | 2.0             | Insect pests .....   | 2.1             |
| Floods .....             | 0.3             | Animal pests .....   | 0.2             |
| Frost or freeze .....    | 4.5             | Defective seed ..... | 0.2             |
| Hail .....               | 1.1             |                      |                 |
| Hot winds .....          | 2.0             | Grand total .....    | 27.8            |
| Storms .....             | 0.3             |                      |                 |
| Total climatic .....     | 22.6            |                      |                 |

\* From "Yearbook of the Department of Agriculture," 1920, Separate No. 861, p. 26.

The wheat crop of the United States is harvested between May and October. More than 90 per cent is harvested during the months of June, July and August as is shown in Table No. 16.

TABLE No. 16.—PERCENTAGE OF THE WHEAT CROP OF THE UNITED STATES HARVESTED MONTHLY\*

|                 | <i>Per cent</i> |
|-----------------|-----------------|
| May .....       | 0.5             |
| June .....      | 22.0            |
| July .....      | 42.3            |
| August .....    | 28.4            |
| September ..... | 6.5             |
| October .....   | 0.3             |
| Total .....     | 100.0           |

\* "Yearbook of the Department of Agriculture," 1919, p. 727.

The production of winter wheat averages about twice that of spring wheat. Incidentally the quality of winter wheat is superior. Table No. 17 shows the relative production during the period from 1910 to 1920:

TABLE No. 17.—RELATIVE PRODUCTION OF SPRING AND WINTER WHEAT, 1910-1920\*

| <i>Year</i> | <i>Winter wheat</i> | <i>Spring wheat</i> |
|-------------|---------------------|---------------------|
| 1920 .....  | 577,763,000         | 209,365,000         |
| 1919 .....  | 729,503,000         | 204,762,000         |
| 1918 .....  | 565,099,000         | 356,339,000         |
| 1917 .....  | 412,901,000         | 223,754,000         |
| 1916 .....  | 480,553,000         | 155,765,000         |
| 1915 .....  | 673,947,000         | 351,854,000         |
| 1914 .....  | 684,990,000         | 206,027,000         |
| 1913 .....  | 523,561,000         | 239,819,000         |
| 1912 .....  | 399,919,000         | 330,348,000         |
| 1911 .....  | 430,656,000         | 190,682,000         |
| 1910 .....  | 434,142,000         | 200,979,000         |

\* "Yearbook of the Department of Agriculture," 1920, Separate No. 861, p. 21.



TABLE No. 18.—WHEAT: ACREAGE, PRODUCTION, VALUE, EXPORTS, ETC., IN THE UNITED STATES, 1900-1920\*

| Year.         | Acreage<br>har-<br>vested<br>(000<br>omit-<br>ted). | Aver-<br>age<br>yield<br>per<br>acre. | Produc-<br>tion (000<br>omitted). | Aver-<br>age<br>farm<br>price<br>per<br>bushel<br>Dec. 1. | Farm<br>value<br>Dec. 1 (000<br>omitted). | Chicago cash price per<br>bushel, No. 1 northern<br>spring |             |                   |                 | Domestic<br>exports<br>including<br>flour, fiscal<br>year<br>beginning<br>July 1. | Imports<br>including<br>flour, fiscal<br>year<br>beginning<br>July 1. | Per<br>cent<br>of<br>crop<br>ex-<br>port-<br>ed. |
|---------------|-----------------------------------------------------|---------------------------------------|-----------------------------------|-----------------------------------------------------------|-------------------------------------------|------------------------------------------------------------|-------------|-------------------|-----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------|--------------------------------------------------|
|               |                                                     |                                       |                                   |                                                           |                                           | December.                                                  |             | Following<br>May. |                 |                                                                                   |                                                                       |                                                  |
|               |                                                     |                                       |                                   |                                                           |                                           | Low.                                                       | High.       | Low.              | High.           |                                                                                   |                                                                       |                                                  |
|               |                                                     |                                       |                                   |                                                           |                                           |                                                            |             |                   |                 |                                                                                   |                                                                       |                                                  |
| <i>Acres.</i> | <i>Bush.</i>                                        | <i>Bushels.</i>                       | <i>Cents.</i>                     | <i>Dollars.</i>                                           | <i>Cts.</i>                               | <i>Cts.</i>                                                | <i>Cts.</i> | <i>Cts.</i>       | <i>Bushels.</i> | <i>Bushels.</i>                                                                   | <i>P. ct.</i>                                                         |                                                  |
| 1900.....     | 42,495                                              | 12.3                                  | 522,230                           | 61.9                                                      | 323,515                                   | 69½                                                        | 74½         | 70                | 75½             | 215,990,073                                                                       | 603,101                                                               | 41.4                                             |
| 1901.....     | 49,896                                              | 15.0                                  | 748,460                           | 62.4                                                      | 467,360                                   | 73                                                         | 79½         | 72¾               | 76¼             | 234,772,516                                                                       | 120,502                                                               | 31.4                                             |
| 1902.....     | 46,202                                              | 14.5                                  | 670,063                           | 63.0                                                      | 422,224                                   | 71½                                                        | 77¾         | 74¾               | 80½             | 202,905,598                                                                       | 1,080,128                                                             | 30.3                                             |
| 1903.....     | 49,465                                              | 12.9                                  | 637,822                           | 69.5                                                      | 443,025                                   | 77¾                                                        | 87          | 87¾               | 101½            | 120,727,613                                                                       | 217,682                                                               | 18.9                                             |
| 1904.....     | 44,075                                              | 12.5                                  | 552,400                           | 92.4                                                      | 510,490                                   | 115                                                        | 122         | 89½               | 113¾            | 44,112,910                                                                        | 3,286,189                                                             | 8.0                                              |
| 1905.....     | 47,854                                              | 14.5                                  | 692,979                           | 74.8                                                      | 518,373                                   | 82½                                                        | 90          | 80¼               | 87¼             | 97,609,007                                                                        | 261,908                                                               | 14.1                                             |
| 1906.....     | 47,306                                              | 15.5                                  | 735,261                           | 66.7                                                      | 490,333                                   | .....                                                      | .....       | 84                | 106             | 146,700,425                                                                       | 590,092                                                               | 20.0                                             |
| 1907.....     | 45,211                                              | 14.0                                  | 634,087                           | 87.4                                                      | 554,437                                   | .....                                                      | .....       | .....             | .....           | 163,043,669                                                                       | 519,785                                                               | 25.7                                             |
| 1908.....     | 47,557                                              | 14.0                                  | 664,602                           | 92.8                                                      | 616,826                                   | 106½                                                       | 112         | 126½              | 137             | 114,268,468                                                                       | 456,940                                                               | 17.2                                             |
| 1909.....     | 44,262                                              | 15.4                                  | 683,379                           | 98.6                                                      | 668,680                                   | 106                                                        | 119¾        | 100               | 119¼            | 87,364,318                                                                        | 815,617                                                               | 12.8                                             |
| 1910.....     | 45,681                                              | 13.9                                  | 635,121                           | 88.3                                                      | 561,051                                   | 104                                                        | 110         | 98                | 106             | 69,311,760                                                                        | 1,146,558                                                             | 10.9                                             |
| 1911.....     | 49,543                                              | 12.5                                  | 621,338                           | 87.4                                                      | 543,063                                   | 105                                                        | 110         | 115               | 122             | 79,689,404                                                                        | 3,413,626                                                             | 12.8                                             |
| 1912.....     | 45,814                                              | 15.9                                  | 730,267                           | 76.0                                                      | 555,280                                   | 85                                                         | 90¾         | 90½               | 96              | 142,879,596                                                                       | 1,282,039                                                             | 19.6                                             |
| 1913.....     | 50,184                                              | 15.2                                  | 763,380                           | 79.9                                                      | 610,122                                   | 89½                                                        | 93          | 96                | 100             | 145,590,349                                                                       | 2,383,537                                                             | 19.1                                             |
| 1914.....     | 53,541                                              | 16.6                                  | 891,017                           | 98.6                                                      | 878,680                                   | 115                                                        | 131         | 141               | 164½            | 332,464,975                                                                       | 715,369                                                               | 37.3                                             |
| 1915.....     | 60,469                                              | 17.0                                  | 1,025,801                         | 91.9                                                      | 942,303                                   | 106                                                        | 128½        | 116               | 126             | 243,117,026                                                                       | 7,187,650                                                             | 23.7                                             |
| 1916.....     | 52,316                                              | 12.2                                  | 636,318                           | 160.3                                                     | 1,019,968                                 | 155½                                                       | 190         | 258               | 340             | 203,573,928                                                                       | 24,924,985                                                            | 32.0                                             |
| 1917.....     | 45,089                                              | 14.1                                  | 636,655                           | 200.8                                                     | 1,278,112                                 | 220                                                        | 220         | 220               | 220             | 132,578,633                                                                       | 31,215,213                                                            | 20.8                                             |
| 1918.....     | 59,181                                              | 15.6                                  | 921,438                           | 204.2                                                     | 1,881,826                                 | 220                                                        | 220         | 245               | 280             | 287,401,579                                                                       | 11,288,591                                                            | 31.2                                             |
| 1919.....     | 72,308                                              | 12.9                                  | 934,265                           | 215.1                                                     | 2,009,407                                 | 280                                                        | 325         | 295               | 345             | 219,861,398                                                                       | 5,495,516                                                             | 23.5                                             |
| 1920.....     | 57,192                                              | 13.8                                  | 787,128                           | 144.3                                                     | 1,135,806                                 | 164                                                        | 187         | .....             | .....           | .....                                                                             | .....                                                                 | .....                                            |

\* "Yearbook of the Department of Agriculture," 1920, Separate No. 861, p. 19.

The production, acreage, and value of the wheat crop of the United States for the period from 1900 to 1920 inclusive is stated in Table No. 18.

The per capita consumption of wheat in the United States averages from 5.5 to 6 bushels annually which makes a total of about 575,000,000 bushels required yearly for domestic food purposes. To this must be added about 75,000,000 bushels for seeding. This gives the total domestic consumption of about 650,000,000 bushels yearly. The surplus yield over and above this quantity is the amount which is available for export.

**Agricultural production: Cotton.**—The United States produces about 60 per cent of the world production of cotton. The average pre-war production from 1909 to 1913 inclusive was 21,143,482 bales of which this country contributed 13,033,137 bales. The important cotton-growing countries of the world, based upon production and volume of exports, for the pre-war period 1909-1913 were as follows:

TABLE No. 19.—PRODUCTION AND EXPORTATION OF COTTON,  
1909-1913\*

(in bales of 478 pounds net)

| <i>Country</i>      | <i>Average<br/>annual<br/>production</i> | <i>Average<br/>annual<br/>exports</i> |
|---------------------|------------------------------------------|---------------------------------------|
| United States ..... | 13,033,137                               | 9,008,000                             |
| British India ..... | 3,511,684                                | 1,966,000                             |
| Egypt .....         | 1,451,621                                | 1,442,000                             |

\* "Yearbook of the Department of Agriculture," 1920, Separate No. 862, p. 28-34.

**Government reports on cotton.**—Government reports on cotton production are issued in the following months and contain the information stated:

June—Condition.

July—Acreage planted and condition.

August—Condition.

September—Condition.

October—Condition.

December—Acreage, production, and value.

The condition of the cotton crop as of the twenty-fifth of the month was reported by the Department of Agriculture in the period 1899-1920 as shown in Table No. 20.

CHART IV.—ANNUAL PRODUCTION AND DEC. 1 PRICE OF COTTON: 1890-1920.

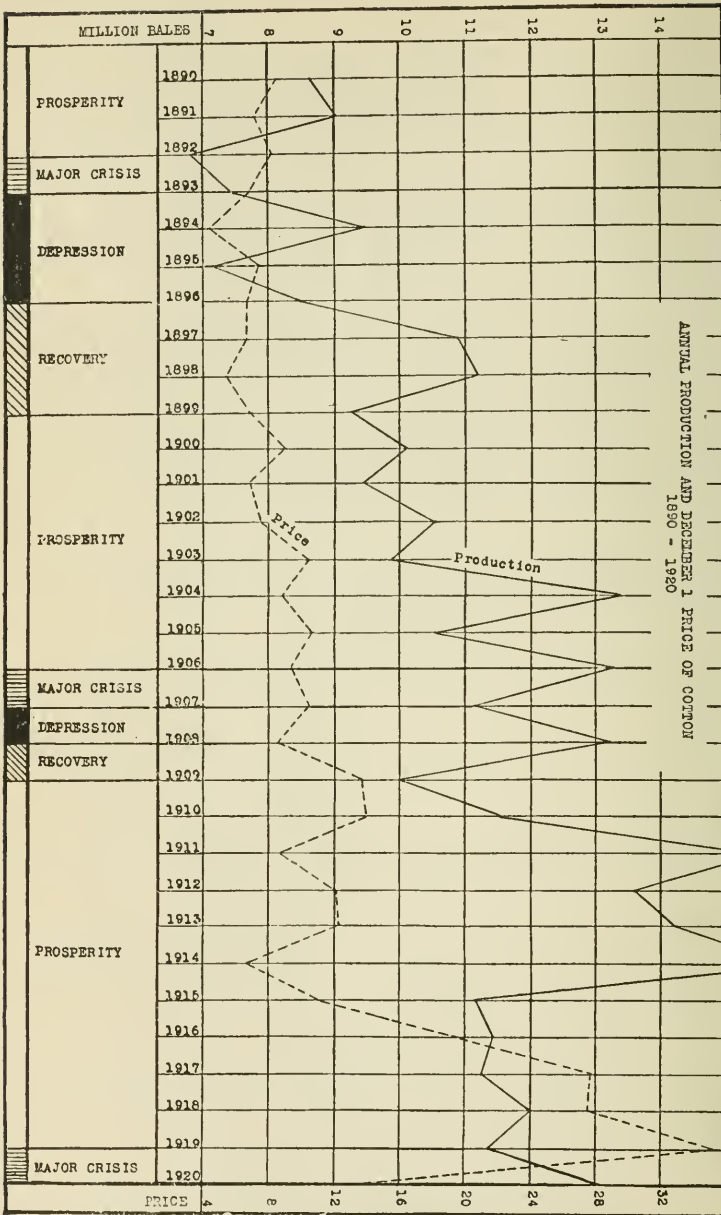


TABLE No. 20.—COTTON: CONDITION OF CROP, UNITED STATES, MONTHLY, 1899-1920\*

| <i>Year</i> | <i>May 25</i> | <i>June 25</i> | <i>July 25</i> | <i>Aug. 25</i> | <i>Sept. 25</i> |
|-------------|---------------|----------------|----------------|----------------|-----------------|
| 1899 .....  | 85.7          | 87.8           | 84.0           | 68.5           | 62.4            |
| 1900 .....  | 82.5          | 75.8           | 76.0           | 68.2           | 67.0            |
| 1901 .....  | 81.5          | 81.1           | 77.2           | 71.4           | 61.4            |
| 1902 .....  | 95.1          | 84.7           | 81.9           | 64.0           | 58.3            |
| 1903 .....  | 74.1          | 77.1           | 79.7           | 81.2           | 65.1            |
| 1904 .....  | 83.0          | 88.0           | 91.6           | 84.1           | 75.8            |
| 1905 .....  | 77.2          | 77.0           | 74.9           | 72.1           | 71.2            |
| 1906 .....  | 84.6          | 83.3           | 82.9           | 77.3           | 71.6            |
| 1907 .....  | 70.5          | 72.0           | 75.0           | 72.7           | 67.7            |
| 1908 .....  | 79.7          | 81.2           | 83.0           | 76.1           | 69.7            |
| 1909 .....  | 81.1          | 74.6           | 71.9           | 63.7           | 58.5            |
| 1910 .....  | 82.0          | 80.7           | 75.5           | 72.1           | 65.9            |
| 1911 .....  | 87.8          | 88.2           | 89.1           | 73.2           | 71.1            |
| 1912 .....  | 78.9          | 80.4           | 76.5           | 74.8           | 69.6            |
| 1913 .....  | 79.1          | 81.8           | 79.6           | 68.2           | 64.1            |
| 1914 .....  | 74.3          | 79.6           | 76.4           | 78.0           | 73.5            |
| 1915 .....  | 80.0          | 80.2           | 75.4           | 69.2           | 60.8            |
| 1916 .....  | 77.5          | 81.1           | 72.3           | 61.2           | 56.3            |
| 1917 .....  | 69.5          | 70.3           | 70.3           | 67.8           | 60.4            |
| 1918 .....  | 82.3          | 85.8           | 73.6           | 55.7           | 54.4            |
| 1919 .....  | 75.6          | 70.0           | 67.1           | 61.4           | 54.4            |
| 1920 .....  | 62.4          | 70.7           | 74.1           | 67.5           | 59.1            |
| 1921 .....  | 66.0          | 69.2           | 64.7           | 49.3           | 42.2            |

\* "Yearbook of the Department of Agriculture," 1920, Separate No. 862, p. 31.

For the eleven-year period, 1909-1919, the extent and causes of the yearly cotton crop losses averaged as follows:

TABLE No. 21.—EXTENT AND CAUSES OF YEARLY COTTON CROP LOSS DURING THE PERIOD FROM 1909 TO 1919\*

|                          | <i>Per cent</i> |                      | <i>Per cent</i> |
|--------------------------|-----------------|----------------------|-----------------|
| Deficient moisture ..... | 12.3            | Plant disease .....  | 2.0             |
| Excessive moisture ..... | 4.3             | Insect pests .....   | 9.7             |
| Floods .....             | 1.0             | Animal pests .....   | 0.0             |
| Frost or freeze .....    | 1.4             | Defective seed ..... | 0.2             |
| Hail .....               | 0.5             |                      |                 |
| Hot winds .....          | 1.6             | Grand total .....    | 33.7            |
| Storms .....             | 0.7             |                      |                 |
| Total climatic .....     | 21.8            |                      |                 |

\* From "Yearbook of the Department of Agriculture," 1920, Separate No. 862, p. 31.

The cotton crop of the United States is picked principally during the months of September and October as is shown in Table No. 22.

TABLE No. 22.—PERCENTAGE OF THE COTTON CROP OF THE UNITED STATES HARVESTED MONTHLY\*

|                     | <i>Per cent</i> |
|---------------------|-----------------|
| July .....          | 1.4             |
| August .....        | 11.5            |
| September .....     | 31.6            |
| October .....       | 34.4            |
| November .....      | 16.0            |
| December .....      | 4.7             |
| January-April ..... | 0.4             |
| Total .....         | 100.0           |

\* "Yearbook of the Department of Agriculture," 1919, p. 728.

The production, acreage, and value of the cotton crop of the United States for the period from 1900 to 1920 inclusive is stated in Table No. 23.

**Agricultural production according to States.**—The value of all farm crops of the United States according to States is shown in Table No. 24. Although the ranking varies somewhat from year to year, the table indicates fairly well the relative importance of the crops in influencing business conditions in the respective States.

**Relation of acreage to agricultural production.**—The acreage planted to the various crops does not change materially from year to year, except for a gradual increase of about 3 per cent annually to keep pace with the growth of the country. The acreage planted does not determine the size of the crop as climatic conditions during the growing season are the governing factor. This was illustrated in 1916 and 1917. In 1916, a crop of 480,553,000 bushels of winter wheat was secured from an original acreage of 39,203,000; whereas in 1917, an original acreage of 40,534,000 yielded but 412,901,000 bushels. In 1912, 33,215,000 acres originally planted yielded 399,919,000 bushels of winter wheat; and in the following year, 1913, practically the same acreage, 33,618,000, yielded 523,561,000 bushels.

The relative stability of agricultural production irrespective of business conditions may likewise be illustrated. On December 1, 1898, the average market price of wheat was 85.1 cents per bushel and at that time 27,642,000 acres were planted to winter wheat for the following year. One year later, the market price had dropped to 62.2 cents, yet 29,954,000 acres were planted. The acreage planted in 1903, 1904, 1905, 1906, and 1907, remained stationary at

CHART V.—EFFECT OF PREVAILING PRICE UPON ACREAGE PLANTED TO WINTER WHEAT: 1893-1915.

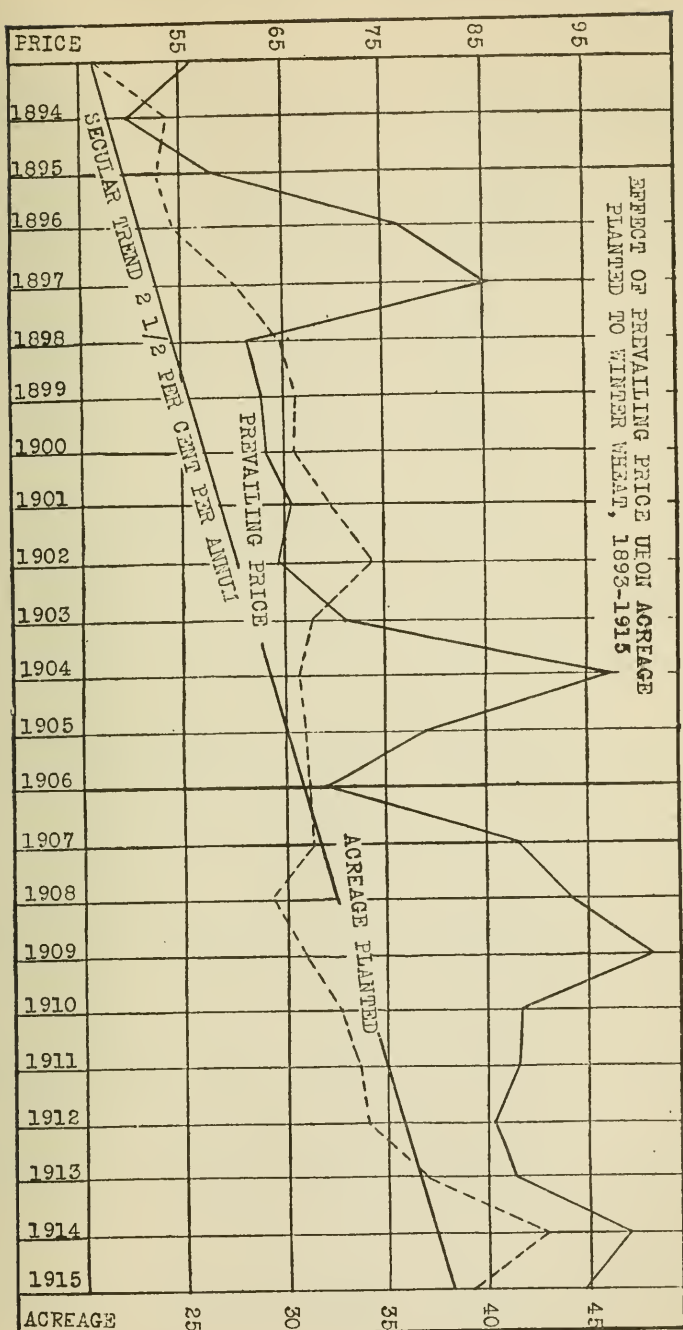




TABLE No. 23.—COTTON: ACREAGE, PRODUCTION, VALUE, EXPORTS, ETC., IN THE UNITED STATES, 1900-1920\*

| Year      | Acre-<br>age<br>(000<br>omitted). | Aver-<br>yield<br>per<br>acre. | Produc-<br>tion<br>(000<br>omitted). | Average<br>farm<br>price<br>per<br>pound<br>Dec. 1. | Farm value<br>Dec. 1<br>(000<br>omitted). | New York closing prices, per pound,<br>on middling upland. |                                  |                                 |                                 | Domestic<br>exports,<br>fiscal<br>year be-<br>ginning<br>July 1. | Imports<br>fiscal<br>year be-<br>ginning<br>July 1. |
|-----------|-----------------------------------|--------------------------------|--------------------------------------|-----------------------------------------------------|-------------------------------------------|------------------------------------------------------------|----------------------------------|---------------------------------|---------------------------------|------------------------------------------------------------------|-----------------------------------------------------|
|           |                                   |                                |                                      |                                                     |                                           | December.                                                  |                                  | May of following<br>year.       |                                 |                                                                  |                                                     |
|           |                                   |                                |                                      |                                                     |                                           | Low.                                                       | High.                            | Low.                            | High.                           |                                                                  |                                                     |
|           |                                   |                                |                                      | Cents.                                              | Dollars.                                  | Cts.                                                       | Cts.                             | Cts.                            | Cts.                            | Bushels.                                                         | Bushels.                                            |
| 1900..... | 24,933                            | 194.4                          | 10,123                               | 9.2                                                 | 463,310                                   | 98 <sup>3</sup> / <sub>4</sub>                             | 109 <sup>9</sup> / <sub>16</sub> | 85 <sup>1</sup> / <sub>16</sub> | 85 <sup>1</sup> / <sub>16</sub> | 93,263                                                           | 93,263                                              |
| 1901..... | 26,774                            | 170.0                          | 9,510                                | 7.0                                                 | 334,088                                   | 8                                                          | 83 <sup>3</sup> / <sub>4</sub>   | 93 <sup>3</sup> / <sub>4</sub>  | 93 <sup>3</sup> / <sub>4</sub>  | 197,431                                                          | 197,431                                             |
| 1902..... | 187.3                             | 187.3                          | 10,631                               | 7.6                                                 | 403,718                                   | 8 <sup>1</sup> / <sub>2</sub>                              | 87 <sup>1</sup> / <sub>8</sub>   | 10.75                           | 12.15                           | 149,749                                                          | 149,749                                             |
| 1903..... | 27,052                            | 174.3                          | 9,851                                | 10.5                                                | 516,763                                   | 11.95                                                      | 14.10                            | 12.75                           | 13.90                           | 6,179,712                                                        | 97,681                                              |
| 1904..... | 31,215                            | 205.9                          | 13,438                               | 9.0                                                 | 603,438                                   | 6.85                                                       | 9.00                             | 7.85                            | 8.85                            | 8,678,644                                                        | 121,017                                             |
| 1905..... | 27,110                            | 186.6                          | 10,575                               | 10.8                                                | 569,791                                   | 11.65                                                      | 12.60                            | 11.25                           | 12.00                           | 7,268,090                                                        | 141,927                                             |
| 1906..... | 31,374                            | 202.5                          | 13,274                               | 9.6                                                 | 635,534                                   | 10.45                                                      | 11.25                            | 11.50                           | 12.90                           | 9,036,434                                                        | 209,584                                             |
| 1907..... | 29,660                            | 179.1                          | 11,107                               | 10.4                                                | 575,226                                   | 11.70                                                      | 12.20                            | 10.20                           | 11.50                           | 7,633,997                                                        | 142,146                                             |
| 1908..... | 32,444                            | 194.9                          | 13,242                               | 8.7                                                 | 575,092                                   | 9.10                                                       | 9.35                             | 10.85                           | 11.80                           | 8,895,970                                                        | 173,036                                             |
| 1909..... | 30,938                            | 154.3                          | 10,005                               | 13.9                                                | 697,681                                   | 14.65                                                      | 16.15                            | 14.50                           | 16.05                           | 6,413,416                                                        | 172,075                                             |
| 1910..... | 32,403                            | 170.7                          | 11,609                               | 14.1                                                | 820,407                                   | 14.80                                                      | 15.25                            | 15.35                           | 16.15                           | 8,067,882                                                        | 227,537                                             |
| 1911..... | 36,045                            | 207.7                          | 15,693                               | 8.8                                                 | 687,888                                   | 9.20                                                       | 9.65                             | 11.30                           | 11.90                           | 11,070,251                                                       | 219,560                                             |
| 1912..... | 34,283                            | 190.9                          | 13,703                               | 11.9                                                | 817,055                                   | 12.75                                                      | 13.20                            | 11.80                           | 12.10                           | 9,124,591                                                        | 243,704                                             |
| 1913..... | 37,089                            | 182.0                          | 14,156                               | 12.2                                                | 862,708                                   | 12.50                                                      | 13.50                            | 12.90                           | 14.50                           | 9,521,881                                                        | 246,694                                             |
| 1914..... | 36,832                            | 209.2                          | 16,135                               | 6.8                                                 | 549,036                                   | 7.25                                                       | 7.80                             | 9.50                            | 10.40                           | 8,807,157                                                        | 370,409                                             |
| 1915..... | 31,412                            | 170.3                          | 11,192                               | 11.3                                                | 631,460                                   | 11.95                                                      | 12.75                            | 12.30                           | 13.35                           | 6,168,140                                                        | 465,602                                             |
| 1916..... | 34,985                            | 156.6                          | 11,450                               | 19.6                                                | 1,122,295                                 | 16.20                                                      | 20.50                            | 19.60                           | 22.10                           | 6,176,162                                                        | 294,123                                             |
| 1917..... | 33,841                            | 159.7                          | 11,302                               | 27.7                                                | 1,566,198                                 | 29.85                                                      | 31.85                            | 25.70                           | 30.10                           | 4,641,023                                                        | 206,651                                             |
| 1918..... | 36,008                            | 159.6                          | 12,041                               | 27.6                                                | 1,663,633                                 | 27.50                                                      | 33.00                            | 25.90                           | 34.00                           | 5,525,894                                                        | 207,184                                             |
| 1919..... | 33,566                            | 161.5                          | 11,421                               | 35.6                                                | 2,034,658                                 | 38.00                                                      | 40.25                            | 40.00                           | 43.00                           | 7,087,487                                                        | 690,628                                             |
| 1920..... | 36,383                            | 170.8                          | 12,987                               | 14.0                                                | 914,590                                   | 14.50                                                      | 16.70                            |                                 |                                 |                                                                  |                                                     |

\* "Yearbook of the Department of Agriculture," p. 1923, Separate No. 862, p. 29.

TABLE No. 24.—VALUE OF THE UNITED STATES FARM CROPS  
ACCORDING TO STATES FOR 1920\*

| Rank   | States            | Value         | Rank   | States            | Value         |
|--------|-------------------|---------------|--------|-------------------|---------------|
| 1....  | Texas .....       | \$727,400,000 | 25.... | North Dakota ...  | \$196,171,000 |
| 2....  | Iowa .....        | 459,191,000   | 26.... | South Dakota ...  | 191,401,000   |
| 3....  | Illinois .....    | 459,179,000   | 27.... | Louisiana .....   | 176,706,000   |
| 4....  | California .....  | 457,750,000   | 28.... | Washington .....  | 150,579,000   |
| 5....  | New York .....    | 456,507,000   | 29.... | Colorado .....    | 149,687,000   |
| 6....  | North Carolina .. | 412,374,000   | 30.... | West Virginia ... | 112,485,000   |
| 7....  | Pennsylvania .... | 397,617,000   | 31.... | Oregon .....      | 110,115,000   |
| 8....  | Kansas .....      | 378,436,000   | 32.... | Maryland .....    | 107,847,000   |
| 9....  | Ohio .....        | 369,869,000   | 33.... | New Jersey .....  | 97,990,000    |
| 10.... | Wisconsin .....   | 360,270,000   | 34.... | Idaho .....       | 92,275,000    |
| 11.... | Missouri .....    | 343,012,000   | 35.... | Florida .....     | 86,503,000    |
| 12.... | Georgia .....     | 323,290,000   | 36.... | Maine .....       | 84,688,000    |
| 13.... | Nebraska .....    | 306,469,000   | 37.... | Montana .....     | 78,042,000    |
| 14.... | Michigan .....    | 303,410,000   | 38.... | Massachusetts ... | 71,088,000    |
| 15.... | Indiana .....     | 299,751,000   | 39.... | Vermont .....     | 59,210,000    |
| 16.... | Oklahoma .....    | 294,715,000   | 40.... | New Mexico ....   | 53,626,000    |
| 17.... | Minnesota .....   | 288,270,000   | 41.... | Connecticut ..... | 53,590,000    |
| 18.... | South Carolina .. | 282,613,000   | 42.... | Wyoming .....     | 51,584,000    |
| 19.... | Kentucky .....    | 268,857,000   | 43.... | Arizona .....     | 45,353,000    |
| 20.... | Arkansas .....    | 248,275,000   | 44.... | Utah .....        | 43,129,000    |
| 21.... | Tennessee .....   | 243,048,000   | 45.... | New Hampshire..   | 30,098,000    |
| 22.... | Alabama .....     | 240,001,000   | 46.... | Delaware .....    | 20,630,000    |
| 23.... | Virginia .....    | 239,792,000   | 47.... | Nevada .....      | 13,244,000    |
| 24.... | Mississippi ..... | 226,182,000   | 48.... | Rhode Island ...  | 6,336,000     |

\* From *Journal of Commerce*, New York, January 17, 1921.

31,000,000 although the market price on December 1 in the respective years was 71.6 cents, 97.8 cents, 78.2 cents, 68.3 cents, and 88.2 cents. This tendency does not always hold good however. A market price of 98.6 cents on December 1, 1914, encouraged the planting of 42,881,000 acres; and the following year disappointment in the prevailing price of 94.7 cents caused the acreage planted to drop to 39,203,000.

Although the preceding illustrations have been confined to winter wheat, the same tendencies hold good for the other crops generally. Agricultural production is not wholly independent of business conditions, but in the main is conducted without any large degree of influence from the commercial world.<sup>10</sup>

**Analysis of Federal crop reports.**—A study of the monthly crop estimates as shown in the preceding tables indicates that August is usually the critical month during the growing season. This is not invariably so, however, as was illustrated in 1901

<sup>10</sup> The figures used in the illustrations given are taken from the "Yearbook of the Department of Agriculture," 1920, Separate No. 861, p. 21.

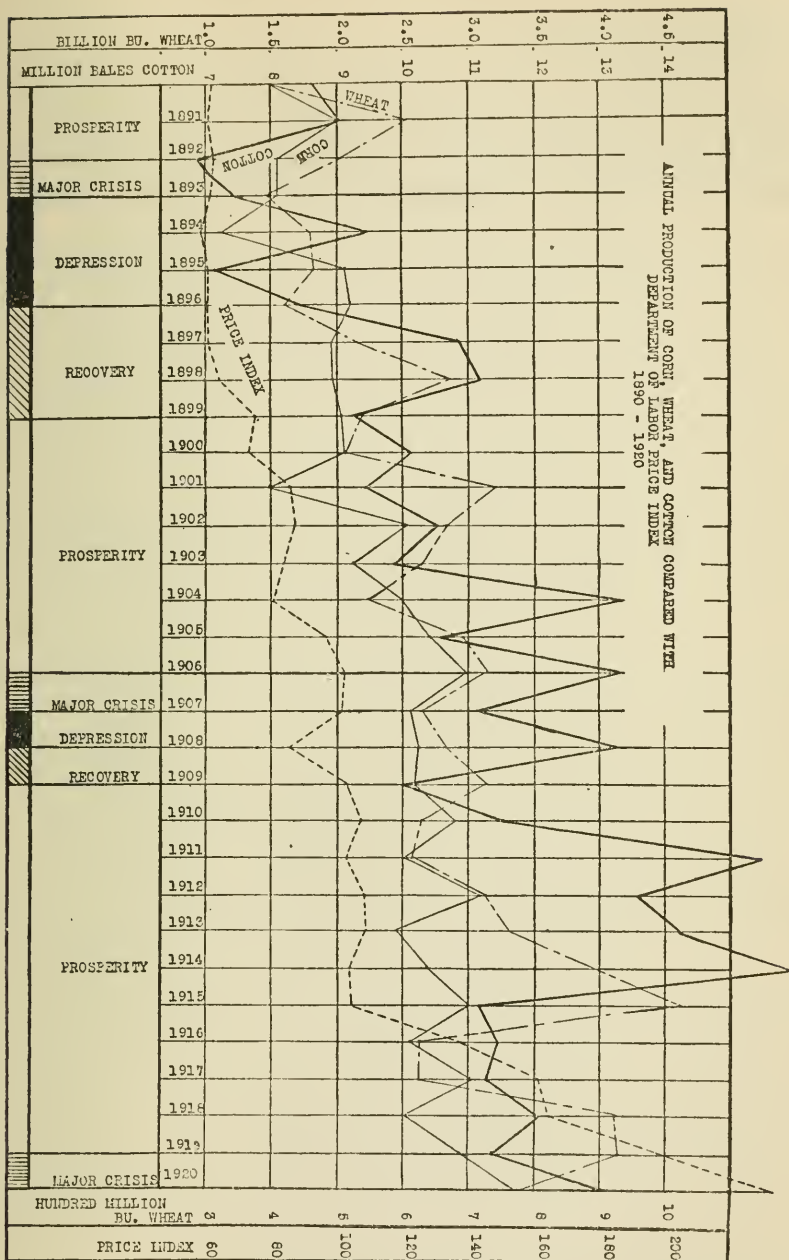
when the condition of the corn crop declined from 81.3 to 54.0 per cent during July. Rarely does the crop improve from the first estimate; the amount of deterioration varies with the different crops. Average figures are of academic interest only in connection with crop estimates as they represent a hypothetical condition which is never realized—this is why the “normal” is not figured on an average basis.

Federal estimates of the corn crop cannot be safely accepted as indicative of the actual yield until the September report is issued. The winter wheat crop—and therefore the total wheat crop—depends chiefly upon the manner in which the crop comes through the winter. The April report often differs widely from that of the preceding December, but foretells with great accuracy the coming harvest. The first report on spring wheat—in June—is unusually deceptive as the actual harvest is invariably much less. The early forecasts on cotton are seldom reliable unless generous allowance is made for deterioration which is certain to come. August is the critical month.

Climatic conditions comprise the principal cause for the yearly crop losses. Deficient moisture is responsible for 50 per cent of the corn loss, for 40 per cent of the wheat loss, and for 30 per cent of the cotton loss. Excessive moisture seldom affects the crops. Frost is of principal danger to the wheat crop and has proven as detrimental to that grain as plant disease and insect pests combined. Cotton is subject to particular ravage from insects which accounts for more than 25 per cent of the loss annually. Plant disease causes 10 per cent of the annual loss in the wheat crop, but only 6 per cent in the case of cotton, and scarcely affects corn.

**Agricultural production as a business barometer.**—Agricultural productivity is the most important single factor which has influence over the trend of business conditions. Agriculture supplies more than 50 per cent (on a value basis) of the raw materials used in manufacturing, gives employment to more workers than any other single industry, and exerts marked influence upon railroad earnings. The inadaptability of agricultural production to regulation in accordance with changing business conditions, and the impossibility of predetermining the harvests because of the uncertain weather which prevails during the growing season, make agriculture the chief influencing factor upon the business cycle. Large

CHART. VI.—COMPARISON OF AGRICULTURAL PRODUCTION WITH AVERAGE WHOLESALE PRICES: 1890-1920.



harvests make for general prosperity, and poor crops have the opposing tendency.

The magnitude of the harvests is not predicated upon the acreage planted; climatic conditions are of even greater importance. With the exception of wheat, the prospective crops cannot be estimated with any large degree of accuracy before the end of August. The wheat crop can be estimated in April.

## CHAPTER VI

### BAROMETERS OF INDUSTRIAL PRODUCTION

**Industrial production.**—Unlike agriculture, manufacturing may be readily regulated in accordance with the trend in business conditions. For this reason, industrial activity serves better as a thermometer of business than as a barometer. A decline in orders causes manufacturers immediately to curtail operations. Overhead expenses continue, but they comprise a comparatively small part of total operating costs, and the factories find it economically possible to reduce the output quickly when changing conditions warrant such a policy.

The number of workers directly engaged in manufacturing, according to the Census of Manufactures taken in 1919, was 9,103,200.<sup>1</sup> As each of these persons may be regarded as the principal wage-earner in a family of four, the total number of persons directly affected by industrial activity in the United States is approximately 36,000,000.<sup>2</sup> Prevailing conditions in industry therefore exert a powerful influence upon commerce. A dullness in manufacturing directly reduces the purchasing power of one-third of the American families, and indirectly affects adversely the other two-thirds.

**Industrial production: Iron and Steel.**—Iron is known as the basic industry. This is because iron is used in practically every line of commercial endeavor. Iron is essential in construction work of every description,—buildings, machinery, tools, rails, locomotives, cars, and ships. An increase in industrial activity necessitates a corresponding increase in the production of iron; and a decline in manufacturing influences a substantial decrease in the output of iron.

<sup>1</sup> *The New York Times*, Oct. 5, 1921.

<sup>2</sup> The average number of persons to a family in the United States was 4.7 in 1900, 4.5 in 1910, and 4.3 in 1920.—“Statistical Abstract of the United States,” 1920, p. 70.



TABLE No. 25.—PIG IRON PRODUCTION IN THE UNITED STATES, ANNUALLY, 1901-1920\*

| <i>Year</i> | <i>Tons</i> | <i>Year</i> | <i>Tons</i> |
|-------------|-------------|-------------|-------------|
| 1901.....   | 15,878,354  | 1911.....   | 33,649,547  |
| 1902.....   | 17,821,307  | 1912.....   | 29,726,937  |
| 1903.....   | 18,009,252  | 1913.....   | 30,966,301  |
| 1904.....   | 16,497,033  | 1914.....   | 23,332,244  |
| 1905.....   | 22,992,380  | 1915.....   | 29,916,213  |
| 1906.....   | 25,307,191  | 1916.....   | 39,434,797  |
| 1907.....   | 25,781,361  | 1917.....   | 38,612,546  |
| 1908.....   | 15,936,018  | 1918.....   | 38,230,440  |
| 1909.....   | 25,795,471  | 1919.....   | 30,582,878  |
| 1910.....   | 27,303,567  | 1920.....   | 36,414,114  |

\* "The Mines Handbook," 1920, p. 49.

The annual production of pig iron in the United States during the period from 1901 to 1920 is shown in Table No. 25. A detailed statement of the production by months from 1911 to 1920 is shown in Table No. 26. Production gained steadily from 1901 to 1907. The depression of 1908 and the recovery in 1909 is clearly reflected. The inactivity of 1914 is also displayed and indicates that the advent of the European war played an important part in checking a prolonged depression. The decline in production during 1919 was due entirely to labor and transportation difficulties. The 1920 output did not, however, foretell the industrial depression which started during the latter part of the year and continued into 1921. The curtailment of production during the early months of 1921 was most rapid, as is indicated in the following comparison between corresponding months in 1920 and 1921:

| <i>Month</i>   | <i>1920<br/>tons</i> | <i>1921<br/>tons</i> |
|----------------|----------------------|----------------------|
| January .....  | 3,015,181            | 2,416,292            |
| February ..... | 2,978,879            | 1,937,257            |
| March .....    | 3,375,907            | 1,595,522            |
| April .....    | 2,739,797            | 1,193,041            |
| May .....      | 2,985,682            | 1,221,221            |
| June .....     | 3,043,540            | 1,064,833            |
| July .....     | 3,067,043            | 864,555              |

An analysis of the statistics on pig iron production indicates that it serves acceptably as a business thermometer but not as a barometer. A gain in output signifies that improvement in business has already set in, and a loss in production reflects depression. But both of these indications serve chiefly to confirm opinions which have previously become current.

TABLE No. 26.—PIG IRON PRODUCTION IN THE UNITED STATES, 1911-1920\*

(in 1,000 tons)

| <i>Month</i> | <i>1911</i> | <i>1912</i> | <i>1913</i> | <i>1914</i> | <i>1915</i> | <i>1916</i> | <i>1917</i> | <i>1918</i> | <i>1919</i> | <i>1920</i> |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| January..... | 1,759       | 2,058       | 2,795       | 1,885       | 1,601       | 3,188       | 3,151       | 2,412       | 3,302       | 3,015       |
| February.... | 1,795       | 2,101       | 2,586       | 1,889       | 1,675       | 3,087       | 2,645       | 2,319       | 2,940       | 2,979       |
| March.....   | 2,171       | 2,405       | 2,764       | 2,348       | 2,064       | 3,338       | 3,251       | 3,213       | 3,090       | 3,376       |
| 1st quarter  | 5,725       | 6,564       | 8,145       | 6,122       | 5,340       | 9,613       | 9,047       | 7,944       | 9,332       | 9,370       |
| April.....   | 2,065       | 2,375       | 2,753       | 2,270       | 2,116       | 3,228       | 3,335       | 3,288       | 2,478       | 2,740       |
| May.....     | 1,893       | 2,513       | 2,822       | 2,093       | 2,263       | 3,361       | 3,417       | 3,446       | 2,108       | 2,989       |
| June.....    | 1,788       | 2,441       | 2,629       | 1,918       | 2,381       | 3,212       | 3,270       | 3,324       | 2,115       | 3,044       |
| 2d quarter   | 5,746       | 7,329       | 8,204       | 6,281       | 6,760       | 9,801       | 10,022      | 10,058      | 6,701       | 8,772       |
| July.....    | 1,793       | 2,411       | 2,561       | 1,958       | 2,563       | 3,225       | 3,342       | 3,421       | 2,429       | 3,067       |
| August.....  | 1,927       | 2,512       | 2,546       | 1,995       | 2,780       | 3,204       | 3,248       | 3,390       | 2,743       | 3,147       |
| September... | 1,977       | 2,464       | 2,506       | 1,883       | 2,853       | 3,202       | 3,134       | 3,418       | 2,488       | 3,129       |
| 3d quarter   | 5,697       | 7,387       | 7,612       | 5,836       | 8,196       | 9,631       | 9,724       | 10,229      | 7,660       | 9,343       |
| October..... | 2,102       | 2,690       | 2,546       | 1,778       | 3,125       | 3,509       | 3,303       | 3,487       | 1,864       | 3,293       |
| November...  | 1,999       | 2,631       | 2,333       | 1,518       | 3,037       | 3,312       | 3,206       | 3,354       | 2,392       | 2,934       |
| December...  | 2,043       | 2,783       | 1,984       | 1,516       | 3,203       | 3,179       | 2,883       | 3,434       | 2,633       | 2,704       |
| 4th quarter  | 6,144       | 8,104       | 6,763       | 4,812       | 9,365       | 10,000      | 9,392       | 10,275      | 6,889       | 8,931       |
| Year.....    | 23,312      | 29,384      | 30,724      | 23,051      | 29,661      | 39,045      | 38,185      | 38,506      | 30,582      | 36,416      |

\* Compiled by *The Iron Age*, and quoted in the "Prentice-Hall Business Information Service."

TABLE No. 27.—UNFILLED ORDERS OF THE UNITED STATES STEEL CORPORATION, 1911-1920\*

(in 1,000 tons)

| Month        | 1911  | 1912  | 1913  | 1914  | 1915  | 1916   | 1917   | 1918  | 1919  | 1920   |
|--------------|-------|-------|-------|-------|-------|--------|--------|-------|-------|--------|
| January..... | 3,111 | 5,380 | 7,827 | 4,614 | 4,249 | 7,923  | 11,474 | 9,478 | 6,684 | 9,285  |
| February.... | 3,401 | 5,454 | 7,657 | 5,026 | 4,345 | 8,569  | 11,577 | 9,288 | 6,011 | 9,502  |
| March.....   | 3,447 | 5,305 | 7,469 | 4,654 | 4,256 | 9,331  | 11,712 | 9,056 | 5,431 | 9,892  |
| 3 mos. av..  | 3,319 | 5,379 | 7,651 | 4,764 | 4,283 | 8,607  | 11,587 | 9,274 | 6,042 | 9,559  |
| April.....   | 3,219 | 5,665 | 6,979 | 4,277 | 4,162 | 9,830  | 12,183 | 8,742 | 4,801 | 10,360 |
| May.....     | 3,113 | 5,751 | 6,324 | 3,998 | 4,265 | 9,938  | 11,887 | 8,338 | 4,282 | 10,940 |
| June.....    | 3,361 | 5,807 | 5,807 | 4,053 | 4,678 | 9,640  | 11,383 | 8,919 | 4,893 | 10,979 |
| 3 mos. av..  | 3,231 | 5,741 | 6,370 | 4,102 | 4,368 | 9,802  | 11,817 | 8,666 | 4,658 | 10,759 |
| July.....    | 3,584 | 5,957 | 5,399 | 4,159 | 4,929 | 9,594  | 10,844 | 8,884 | 5,579 | 11,118 |
| August.....  | 3,696 | 6,163 | 5,223 | 4,213 | 4,908 | 9,660  | 10,407 | 8,759 | 6,109 | 10,805 |
| September..  | 3,611 | 6,552 | 5,004 | 3,788 | 5,318 | 9,523  | 9,833  | 8,298 | 6,285 | 10,375 |
| 3 mos. av..  | 3,630 | 6,224 | 5,208 | 4,053 | 5,051 | 9,592  | 10,361 | 8,647 | 5,991 | 10,766 |
| October..... | 3,694 | 7,594 | 4,514 | 3,461 | 6,165 | 10,015 | 9,010  | 8,353 | 6,473 | 9,837  |
| November...  | 4,142 | 7,853 | 4,396 | 3,325 | 7,189 | 11,059 | 8,897  | 8,125 | 7,128 | 9,021  |
| December...  | 5,085 | 7,932 | 4,282 | 3,837 | 7,806 | 11,547 | 9,382  | 7,379 | 8,265 | 8,148  |
| 3 mos. av..  | 4,307 | 7,793 | 4,397 | 3,541 | 7,053 | 10,877 | 9,096  | 7,952 | 7,288 | 9,002  |
| Yearly av.   | 3,621 | 6,284 | 5,906 | 4,115 | 5,188 | 9,719  | 10,715 | 8,634 | 5,994 | 10,021 |

\* As reported in the "Prentice-Hall Business Information Service."

The unfilled orders of the United States Steel Corporation, as shown in Table No. 27, are also used as an index in the same manner as pig iron production. The statement of unfilled orders is not so trustworthy, however, because (1) a narrower field is covered, and (2) the percentage of the total output of steel products which the United States Steel Corporation supplies varies at different periods, and is always less than 50 per cent.

**Industrial production: Coal.**—Fuel consumption is a factor of prime importance in the measurement of industrial activity. The chief fuel used in manufacturing is bituminous coal, although oil is gaining rapidly and promises eventually to displace coal.<sup>3</sup> The production of bituminous coal in the United States from 1913 to 1920 is shown in Table No. 28. As coal is consumed almost as rapidly as it is produced<sup>4</sup> the output reflects industrial activity to no small extent. Transportation difficulties and labor controversies, however, as was illustrated in the spring of 1920, often cause a reduction in output when industry is active.

**Industrial production: Imports.**—The volume—as distinguished from value—of the imports of the important raw materials used in manufacturing affords another method of measuring industrial activity. Table No. 29 shows the imports by volume of the six most important raw materials used in manufacturing imported annually during the period from 1901 to 1920. The 1920 exhibit is notable. Silk, hides, and wool declined enormously from the volumes attained in 1919. Rubber imports increased despite a precipitous decline in the market price. Tin imports exceeded those of 1919, but were materially less than in the three preceding years.

The great difficulty in interpreting statistics such as appear in Table No. 29 is to allow for the normal growth of the country, and for industrial development in certain lines. Silk imports, for illustration, should show a definite increase

<sup>3</sup> The fuel used in manufacturing in 1914 was as follows: anthracite coal, 14,724,265 tons; bituminous coal, 166,699,827 tons; oil, 48,689,232 barrels; gas, 285,609,876 thousand feet.—“Statistical Abstract of the United States,” 1920, p. 189.

<sup>4</sup> The mines have neither the facilities nor the finances necessary to store coal at the mouth of the mines and produce only when cars are available for immediate loading. Consumers rarely carry a surplus stock beyond the requirements of the near future.

TABLE No. 28.—BITUMINOUS COAL PRODUCTION IN THE UNITED STATES, 1913-1920\*

| Month            | (in 1,000 tons) |         |         |         |         |         |         |         |  |  |
|------------------|-----------------|---------|---------|---------|---------|---------|---------|---------|--|--|
|                  | 1913            | 1914    | 1915    | 1916    | 1917    | 1918    | 1919    | 1920    |  |  |
| January.....     | 42,276          | 40,188  | 37,190  | 46,596  | 47,967  | 42,227  | 41,487  | 48,689  |  |  |
| February.....    | 37,057          | 35,472  | 29,321  | 45,187  | 41,353  | 43,777  | 31,566  | 40,181  |  |  |
| March.....       | 37,536          | 45,455  | 31,801  | 43,827  | 47,869  | 43,113  | 33,719  | 46,882  |  |  |
| 1st quarter..... | 116,869         | 121,115 | 98,312  | 135,610 | 137,189 | 134,117 | 106,772 | 135,752 |  |  |
| April.....       | 34,169          | 23,609  | 29,968  | 33,628  | 41,854  | 46,041  | 32,164  | 37,939  |  |  |
| May.....         | 37,205          | 28,551  | 30,938  | 38,804  | 47,086  | 50,443  | 37,547  | 38,993  |  |  |
| June.....        | 37,405          | 31,412  | 33,957  | 37,742  | 46,824  | 51,138  | 37,054  | 45,114  |  |  |
| 2d quarter.....  | 108,779         | 83,572  | 94,863  | 110,174 | 135,764 | 147,622 | 106,765 | 122,046 |  |  |
| July.....        | 38,858          | 34,305  | 35,573  | 38,113  | 46,292  | 54,971  | 42,698  | 45,009  |  |  |
| August.....      | 41,590          | 37,751  | 38,161  | 42,696  | 47,372  | 55,114  | 42,883  | 48,910  |  |  |
| September.....   | 41,424          | 39,019  | 40,964  | 42,098  | 45,108  | 51,183  | 47,402  | 49,172  |  |  |
| 3d quarter.....  | 121,872         | 111,075 | 114,698 | 122,907 | 138,772 | 161,268 | 132,983 | 143,091 |  |  |
| October.....     | 46,164          | 37,685  | 44,198  | 44,807  | 48,337  | 52,300  | 56,243  | 52,144  |  |  |
| November.....    | 43,233          | 33,392  | 44,737  | 44,927  | 47,690  | 43,895  | 18,688  | 51,457  |  |  |
| December.....    | 41,519          | 35,862  | 45,814  | 44,098  | 44,037  | 40,184  | 36,612  | 52,123  |  |  |
| 4th quarter..... | 130,916         | 106,939 | 134,749 | 133,832 | 140,064 | 136,379 | 111,543 | 155,724 |  |  |
| Year.....        | 478,436         | 422,701 | 442,622 | 502,523 | 551,789 | 579,386 | 458,063 | 556,613 |  |  |

\* Compiled by the United States Geological Survey and quoted in the "Prentice-Hall Business Information Service."

from year to year to keep pace with the growth of the nation. Such an increase does not represent greater industrial activity. The development of the automobile business has caused a

TABLE No. 29.—IMPORTS OF PRINCIPAL RAW MATERIALS USED IN MANUFACTURES IN THE UNITED STATES, 1901-1920\*

| (according to quantities) |                      |                       |                        |
|---------------------------|----------------------|-----------------------|------------------------|
| <i>Year</i>               | <i>Silk (pounds)</i> | <i>Hides (pounds)</i> | <i>Rubber (pounds)</i> |
| 1920.....                 | 30,058,374           | 509,983,176           | 566,546,136            |
| 1919.....                 | 44,816,918           | 744,836,035           | 535,940,421            |
| 1918.....                 | 32,865,453           | 361,890,899           | 325,959,308            |
| 1917.....                 | 36,502,831           | 631,083,653           | 405,638,278            |
| 1916.....                 | 32,454,740           | 726,310,405           | 270,090,205            |
| 1915.....                 | 30,978,645           | 646,271,307           | 221,481,921            |
| 1914.....                 | 25,650,383           | 556,194,541           | 143,065,161            |
| 1913.....                 | 27,978,805           | 497,879,316           | 115,880,641            |
| 1912.....                 | 24,766,835           | 615,105,439           | 118,058,284            |
| 1911.....                 | 20,904,703           | 424,876,956           | 82,851,725             |
| 1910.....                 | 21,563,782           | 460,607,078           | 100,806,186            |
| 1909.....                 | 22,227,185           | 572,776,503           | 93,967,414             |
| 1908.....                 | 18,723,119           | 328,446,882           | 76,289,474             |
| 1907.....                 | 15,691,444           | 355,547,950           | 68,653,291             |
| 1906.....                 | 16,844,035           | 398,526,863           | 67,907,251             |
| 1905.....                 | 15,514,718           | 381,140,412           | 64,147,741             |
| 1904.....                 | 16,578,005           | 300,825,242           | 61,889,758             |
| 1903.....                 | 11,655,333           | 288,987,843           | 55,744,120             |
| 1902.....                 | 13,762,254           | 325,184,528           | 50,851,257             |
| 1901.....                 | 12,277,991           | 310,193,987           | 55,142,810             |
| <i>Year</i>               | <i>Wool (pounds)</i> | <i>Fibers (tons)</i>  | <i>Tin (pounds)</i>    |
| 1920.....                 | 259,617,641          | 405,801               | 126,038,389            |
| 1919.....                 | 445,892,834          | 327,279               | 89,698,391             |
| 1918.....                 | 453,727,372          | 382,629               | 142,507,393            |
| 1917.....                 | 420,994,547          | 399,811               | 143,687,037            |
| 1916.....                 | 449,189,924          | 492,714               | 138,073,293            |
| 1915.....                 | 412,721,292          | 393,232               | 115,636,332            |
| 1914.....                 | 260,192,891          | 395,517               | 95,049,612             |
| 1913.....                 | 151,813,703          | 391,118               | 104,282,230            |
| 1912.....                 | 238,118,350          | 403,896               | 116,003,385            |
| 1911.....                 | 155,922,510          | 283,517               | 106,936,872            |
| 1910.....                 | 180,134,981          | 273,260               | 105,137,740            |
| 1909.....                 | 312,131,171          | 366,574               | 95,350,020             |
| 1908.....                 | 142,559,384          | 306,944               | 82,503,190             |
| 1907.....                 | 188,305,955          | 315,590               | 82,548,838             |
| 1906.....                 | 196,844,298          | 301,927               | 101,027,188            |
| 1905.....                 | 246,821,389          | 324,202               | 89,227,698             |
| 1904.....                 | 186,572,683          | 298,137               | 83,168,657             |
| 1903.....                 | 173,593,891          | 289,061               | 83,133,847             |
| 1902.....                 | 176,292,639          | 324,600               | 85,043,353             |
| 1901.....                 | 124,964,377          | 256,771               | 74,560,487             |

\* "Monthly Summary of Foreign Commerce of the United States" for the period 1901-1920.



tremendous increase in rubber imports and prevented the 1920 imports from following the trend shown in the imports of other raw materials used in industries which have attained a more stable basis.

**Sources of information on industrial production.**—Statistics of pig iron production are compiled monthly by *The Iron Age*, a weekly publication which is issued on Thursdays. The pig iron production of each month appears usually in the issue of the first Thursday of the following month. The unfilled orders of the United States Steel Corporation are compiled as of the last day of each month and are made public about the tenth of the following month. Bituminous coal production is estimated weekly by the United States Geological Survey of the Department of the Interior, and usually appears in the newspapers on Monday of the second following week. Foreign trade figures are compiled monthly by the Department of Commerce, and are published in the "Monthly Summary of Foreign Commerce of the United States" during the latter part of the succeeding month.<sup>5</sup>

**Secular trend and seasonal variation.**—Secular trend and seasonal variation must be taken into consideration in the barometric study of production. A gradual increase in production is a normal development when population continually gains. During the past thirty years the average annual increase in production has been around  $3\frac{1}{2}$  to 4 per cent.<sup>6</sup> A

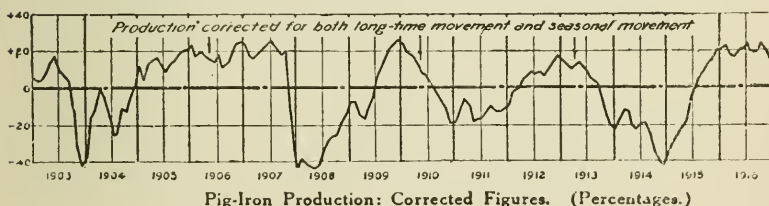
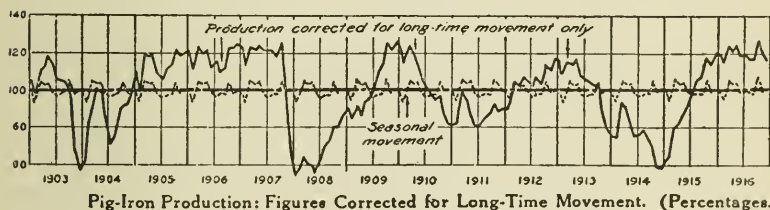
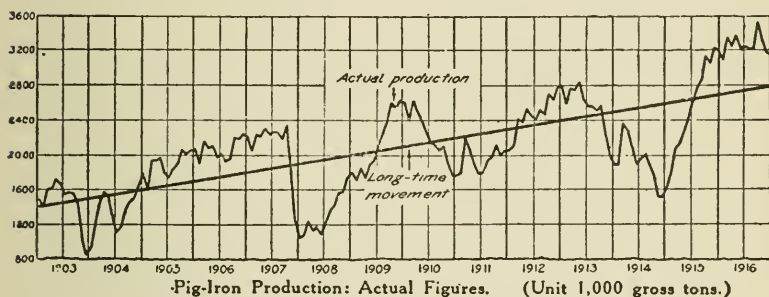
<sup>5</sup> All information referred to in this paragraph does not appear in the daily papers. The *Journal of Commerce* (New York), the financial section of the *New York Evening Post* on Saturdays, and *The Commercial and Financial Chronicle* (New York, weekly) are worthy of mention, among others, as periodicals which satisfactorily cover this field.

<sup>6</sup> For convenience in determining the cumulative effect of an advancing secular trend at the rate of 4 per cent per annum, a table is appended:

| Year    | Per cent. | Year    | Per cent. | Year    | Per cent. |
|---------|-----------|---------|-----------|---------|-----------|
| 1.....  | 104.00    | 11..... | 153.94    | 21..... | 227.88    |
| 2.....  | 108.16    | 12..... | 160.10    | 22..... | 236.99    |
| 3.....  | 112.48    | 13..... | 166.50    | 23..... | 246.47    |
| 4.....  | 116.98    | 14..... | 173.16    | 24..... | 256.33    |
| 5.....  | 121.66    | 15..... | 180.01    | 25..... | 266.58    |
| 6.....  | 126.53    | 16..... | 187.30    | 26..... | 277.25    |
| 7.....  | 131.59    | 17..... | 194.79    | 27..... | 288.34    |
| 8.....  | 136.85    | 18..... | 202.58    | 28..... | 299.87    |
| 9.....  | 142.33    | 19..... | 210.68    | 29..... | 311.86    |
| 10..... | 148.02    | 20..... | 219.11    | 30..... | 324.34    |

To illustrate, production in 1900 should have been 148.02 per cent of the 1890 output, in 1910, 219.11 per cent of 1890, and in 1920, 324.34 per cent of 1890. Likewise, production in 1910 should have been 148.02 per cent of that in 1900, and in 1920, 219.11 per cent of 1900.

CHART VII.—PIG-IRON PRODUCTION IN THE UNITED STATES,  
CORRECTED FOR SECULAR TREND AND SEASONAL  
VARIATION: 1903-1917.\*



\* From "The Index of General Business Conditions," page 5, published by the Committee on Economic Research of Harvard University.

gain of this nature is known as the secular trend and unless allowance is made for its influence, production statistics are liable to false interpretation.<sup>7</sup>

Likewise seasonal variation must be considered. Bituminous coal production is not constant throughout the year. The output always increases during the winter months and decreases during the summer months. A weekly production of 9,000,000 tons in June reflects greater activity than 10,000,000 tons in November. Iron and steel production have large seasonal variations.<sup>8</sup>

Industrial production as a business barometer.—The facility with which industrial productivity can be regulated with changing business conditions makes this factor one of uncommon value in the measurement of current business activity. But the fact that industry is regulated with changing conditions indicates that the major cause of the change is external rather than internal so far as industry is concerned. While this is true in the larger sense, since agricultural production is the major determinant, industry contributes itself to the forces which govern industrial activity. That facility which enables industrial production readily to be augmented or diminished permits stages of overproduction at one time and underproduction at another. Stability in business conditions

<sup>7</sup> "The fact which stands out, of course, in all these investigations, is the amazingly even character of this production growth, and how very slight is the variation in the flow of goods from year to year throughout periods of wide prosperity or deep depression; how slightly it was affected by the war, and how little relationship it often bore to the prevailing spirit or traditional idea of a given time."—Carl Snyder, in *The American Economic Review*, vol. XI, No. 1, p. 71.

<sup>8</sup> The influence of secular trend and seasonal variation has been exceptionally well illustrated in an article entitled "The Index of General Business Conditions" written by Prof. W. M. Persons and issued by the Harvard University Committee on Economic Research. The production of pig iron in the United States in March, 1904, was 1,447,000 tons; in February, 1908, 1,077,000 tons; and in December, 1918, 3,434,000 tons. The problem is to determine which figures represent the greatest relative activity. On the basis of the secular trend, the normal output in February, 1908, should have been 1,901,000 tons, and in December, 1918, 2,932,000 tons. On this basis, the ratios of actual production to normal output were 95 per cent, 57 per cent, and 117 per cent, respectively. Further correction must be made to allow for seasonal variation, as three different months are involved. The ratios of average output for March, February, and December are respectively 106, 94, and 100. Through subtracting the seasonal relatives of 106, 94 and 100 from the relatives 95, 57, and 117, comparable differences of -11, -37, and +17 are found. "The deviations reveal the depression in March, 1904, the deep depression of February, 1908, and the great activity of December, 1918."

depends upon uniformity of production in all lines. The fact that agricultural production is not subject to this control is the chief factor which causes the fluctuations in commercial activity. And, although industrial production can be regulated to insure uniformity with conditions throughout commerce, the enhanced profits which arise during periods of activity cause industrial production to be increased far beyond conservative warrant, and subsequent reaction is inevitable.

The most successful men in business are those whose perception is not blinded nor distorted through profits. Difficult indeed is the assumption of a conservative attitude toward production—founded though it may be upon the appreciation that a lack of balance is rapidly developing—when earnings are abnormally large. And in this manner, the facility with which industrial activity can be regulated becomes a disadvantage rather than an advantage. The inability of industrial producers to get and utilize a true perspective of the entire business situation in order that a parallelism may be maintained between conditions of supply and demand contributes materially to the alternate development of periods of extreme prosperity and depression.

From a barometric viewpoint, industrial production is too great or too small, not by comparison with productivity at a preceding time, but in relationship to existing conditions throughout the commercial world. Industry should keep pace with agriculture, with conditions abroad, and with the money market. Irrespective of current earnings, increased industrial activity is ill-founded if agricultural production, foreign conditions, and the money market are not equally favorable. The relative balance between industrial production and these external factors should be the subject of constant scrutiny, especially in times of activity, as herein develop earliest the indications of ensuing changes in the business cycle.

**Structural production.**—As has been shown in the discussion of the business cycle<sup>9</sup> new construction is noticeably affected by changing business conditions. An era of rising prices acts as a deterrent to building, and for this reason, the height of a period of prosperity customarily finds construction substantially curtailed. When prices are falling,

<sup>9</sup> Part I, Chapters II and III.

building operations are encouraged, although a natural tendency exists to wait until the bottom has been reached.

Accurate and comprehensive figures which would state the volume of building operations in progress would be most helpful in measuring productive activity. Unfortunately no such figures are available. The best that has been done thus far has been to compile aggregate totals of the building permits issued in leading cities, as is shown in Table No. 30. Such compilations are subject to two important qualifications: (1) permits are often granted for projects which are subsequently abandoned; and (2) permits are stated on a value basis which makes comparison between periods invidious because of changes in price levels and wage scales.

Table No. 30 shows that total permits in 1918 were valued at \$385,122,612 in comparison with \$826,100,319 in 1913. As the level of prices in 1918 was more than double that of 1913, actual operations in 1913 were more than four times those in 1918. That a drop in prices does not immediately cause a revival in building operations is shown in the permits granted during the last six months of 1920 when prices were falling more rapidly than at any previous time in our commercial history. Permits issued during the third quarter of 1920 amounted to \$321,212,555 in comparison with \$417,579,051 in 1919; for the last quarter in 1920, \$226,097,448 compared with \$418,711,778 in 1919.

Structural production as a business barometer.—The trend of structural production is well-defined throughout the business cycle and is of particular barometric interest because it differs radically from either agricultural or industrial production. Agriculture is conducted largely irrespective of business conditions; industry is at a maximum during periods of prosperity and at a minimum during periods of depression. Construction is at its maximum during a period of activity but significantly begins to decline well before the general trend of conditions reaches its highest point. Moreover, in periods of depression, building activity is resumed well before the general trend moves upward.

A practical difficulty of large importance, however, limits the use of this factor as a barometer. Statistics available are grossly inadequate as they mainly comprise the value of permits granted in certain cities. Construction statistics, to be of maximum service, should represent the entire country and



TABLE No. 30.—NEW BUILDING, 1911-1920\*

(Permits issued in about 170 leading cities)

(in dollars)

| Month         | 1911        | 1912        | 1913        | 1914        | 1915        | 1916        | 1917        | 1918        | 1919          | 1920          |
|---------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|---------------|
| January.....  | 48,555,636  | 41,411,871  | 54,340,563  | 49,254,909  | 44,011,964  | 52,761,278  | 49,085,996  | 20,365,124  | 20,959,143    | 118,527,277   |
| February..... | 42,842,495  | 54,607,238  | 61,141,275  | 51,866,198  | 45,408,843  | 55,773,061  | 57,709,936  | 27,566,395  | 33,211,909    | 106,485,674   |
| March.....    | 80,470,184  | 78,588,240  | 78,375,907  | 75,359,771  | 66,073,518  | 85,626,593  | 82,619,165  | 36,565,279  | 57,063,154    | 139,104,195   |
| 1st quarter.  | 171,868,315 | 174,607,349 | 193,857,745 | 176,480,878 | 155,494,325 | 194,160,932 | 189,415,097 | 84,496,798  | 111,234,206   | 364,117,146   |
| April.....    | 83,339,805  | 99,561,328  | 94,903,554  | 80,983,275  | 75,258,517  | 90,461,400  | 81,217,543  | 45,520,004  | 75,970,333    | 167,199,376   |
| May.....      | 79,960,920  | 93,105,947  | 86,809,963  | 80,940,588  | 80,572,773  | 115,452,376 | 75,185,961  | 45,863,724  | 103,227,110   | 129,471,580   |
| June.....     | 87,946,080  | 94,707,643  | 74,025,741  | 83,259,590  | 63,990,223  | 97,455,752  | 65,379,298  | 38,873,542  | 119,771,860   | 119,493,718   |
| 2d quarter..  | 251,246,805 | 287,374,918 | 255,738,258 | 245,183,453 | 219,821,513 | 303,369,528 | 221,782,802 | 130,257,270 | 298,969,303   | 416,164,674   |
| July.....     | 78,407,023  | 85,720,991  | 58,076,782  | 82,180,394  | 70,455,531  | 109,583,330 | 53,544,759  | 42,737,066  | 135,454,719   | 118,056,957   |
| August.....   | 91,268,999  | 81,900,934  | 64,619,339  | 56,168,220  | 63,907,981  | 74,598,691  | 49,846,652  | 38,236,286  | 150,177,348   | 109,235,941   |
| September...  | 72,225,168  | 67,921,024  | 73,272,194  | 52,758,329  | 68,881,448  | 77,218,540  | 51,039,761  | 32,685,282  | 131,946,984   | 93,919,657    |
| 3d quarter..  | 241,901,190 | 235,542,949 | 195,968,315 | 191,107,943 | 203,244,960 | 261,400,561 | 154,431,172 | 113,658,634 | 417,579,051   | 321,212,555   |
| October.....  | 66,746,617  | 72,275,680  | 65,402,337  | 49,951,256  | 68,515,343  | 82,951,962  | 45,555,761  | 21,075,314  | 146,348,703   | 92,592,049    |
| November....  | 66,049,706  | 69,935,837  | 46,519,729  | 40,130,697  | 70,327,162  | 70,678,968  | 42,121,364  | 18,266,992  | 128,386,807   | 65,593,920    |
| December....  | 54,315,166  | 73,370,322  | 68,812,935  | 41,728,593  | 52,560,825  | 65,091,237  | 28,814,082  | 17,367,604  | 143,976,268   | 67,911,479    |
| 4th quarter.  | 187,111,489 | 215,581,839 | 180,735,001 | 131,800,546 | 191,403,330 | 218,722,167 | 116,491,207 | 56,709,910  | 418,711,778   | 226,097,448   |
| Year.....     | 852,127,799 | 913,107,055 | 826,100,319 | 744,572,820 | 769,964,128 | 977,653,188 | 682,120,278 | 385,122,612 | 1,246,494,338 | 1,327,591,823 |

\* As compiled by "Bradstreet's" and reported in the "Prentice-Hall Business Information Service."



cover the broad field—bridges, railroads, and tunnels for example—instead of simply building permits or contracts awarded.

**A general index of industrial production.**—In view of the accepted doctrine that alternate periods of prosperity and depression arise out of maladjustments in conditions of supply and demand, i.e., in the lack of balance in production generally, it is surprising that earlier attempts have not been made to construct production indexes which would permit ready comparison of the relative current activity in the major lines of industry. An attempt to devise such an index is now being worked out by the Federal Reserve Bank of New York.

“But if the problem of measurement of the national product has now been disposed of, there remains yet another, and that is the measurement of the current product; and for practical affairs this is of far greater importance. The variations in the business cycle, as Professor Mitchell has so clearly set forth, lie perhaps as much as anything in a dislocation between the even pace in the different lines of industry—too rapid expansion in one direction, too little in another, so as to disturb the normal equilibrium. The whole of the national product does not greatly vary, but that of the several industries may vary quite widely. Now, in very large part, goods are exchanged for goods and services for services; and if there be overexpansion in this line or that, there comes inevitably overproduction in special lines, a period of crisis for these industries, unemployment, failures, and all the traditional phenomena of lack of balance.”<sup>10</sup>

As is shown in Table No. 31, some twenty-five of the leading industries are included. Eventually it is expected that a dozen more will be added, and in this manner comprehensive indices will be possible. “By reducing each of the industries to a common denominator we shall know by means of index figures exactly whether we are producing very much more pig iron or copper or sugar, or importing more rubber or silk or wool than the normal need. It was very striking, when we first obtained these indices, to note how clear was the overproduction in certain lines and the very large certainty that there would be inevitably a collapse in these special industries. In fact, from the relative height of the

<sup>10</sup> *The American Economic Review*, vol. XI, No. 1, p. 72.

TABLE No. 31.—INDICES OF CURRENT PRODUCTION AND TRADE\*

Base: Average of the 12 months of 1917 = 100

Seasonal variation eliminated

| <i>Items</i>                            | <i>1919. Average<br/>third quarter</i> | <i>1919. Average<br/>fourth quarter</i> | <i>1920. Average<br/>first quarter</i> | <i>1920. Average<br/>second quarter</i> | <i>1920. Average<br/>third quarter</i> |
|-----------------------------------------|----------------------------------------|-----------------------------------------|----------------------------------------|-----------------------------------------|----------------------------------------|
| 1. Pig iron .....                       | 82.2                                   | 71.5                                    | 98.5                                   | 90.5                                    | 100.2                                  |
| 2. Steel ingots .....                   | 83.4                                   | 73.9                                    | 98.5                                   | 90.0                                    | 96.9                                   |
| 3. Bituminous coal .....                | 91.6                                   | 75.8                                    | 99.2                                   | 96.4                                    | 96.0                                   |
| 4. Anthracite coal .....                | 92.6                                   | 94.3                                    | 89.4                                   | 85.1                                    | 77.7                                   |
| 5. Copper .....                         | 67.2                                   | 71.0                                    | 76.1                                   | 73.5                                    | 70.1                                   |
| 6. Tin deliveries .....                 | 64.3                                   | 114.1                                   | 98.4                                   | 92.3                                    | 97.7                                   |
| 7. Cement .....                         | 92.9                                   | 97.8                                    | 121.7                                  | 94.6                                    | 97.9                                   |
| 8. Petroleum .....                      | 123.3                                  | 119.1                                   | 125.5                                  | 134.3                                   | 140.8                                  |
| 9. Gas and fuel oil .....               | 127.7                                  | 129.0                                   | 120.5                                  | 129.8                                   | 154.1                                  |
| 10. Cotton consumption .....            | 90.7                                   | 91.7                                    | 97.1                                   | 96.1                                    | 88.7                                   |
| 11. Wool consumption .....              | 110.1                                  | 119.1                                   | 125.7                                  | 105.5                                   | 68.5                                   |
| 12. Silk imports .....                  | 165.1                                  | 120.2                                   | 144.7                                  | 91.7                                    | 78.5                                   |
| 13. Wheat flour .....                   | 119.3                                  | 109.2                                   | 113.1                                  | 95.1                                    | 97.0                                   |
| 14. Cattle slaughtered .....            | 105.1                                  | 104.0                                   | 107.0                                  | 97.9                                    | 92.5                                   |
| 15. Swine slaughtered .....             | 115.0                                  | 108.3                                   | 115.0                                  | 120.7                                   | 115.5                                  |
| 16. Sheep slaughtered .....             | 145.2                                  | 148.1                                   | 118.7                                  | 108.2                                   | 128.2                                  |
| 17. Sugar refined .....                 | 121.7                                  | 94.1                                    | 124.9                                  | 121.0                                   | 108.8                                  |
| 18. Tobacco, cigars, etc. ....          | 93.4                                   | 106.7                                   | 113.8                                  | 106.4                                   | 93.2                                   |
| 19. Rubber imports .....                | 114.7                                  | 157.7                                   | 222.0                                  | 130.1                                   | 130.5                                  |
| 20. Wood pulp .....                     | 93.6                                   | 111.5                                   | 106.2                                  | 124.7                                   | 108.2                                  |
| 21. Paper .....                         | 113.5                                  | 118.7                                   | 125.5                                  | 131.0                                   | 132.2                                  |
| 22. Railway cars .....                  | 181.6                                  | 103.2                                   | 52.7                                   | 37.7                                    | 40.5                                   |
| 23. Locomotives .....                   | 59.8                                   | 30.5                                    | 26.2                                   | 43.2                                    | 52.9                                   |
| 24. Building activity .....             | 73.3                                   | 73.4                                    | 56.9                                   | 36.1                                    | 33.9                                   |
| 25. Imports .....                       | 122.5                                  | 124.2                                   | 132.7                                  | 131.9                                   | 140.1                                  |
| Average of 25 comparable<br>items ..... | 106.0                                  | 102.7                                   | 108.4                                  | 98.6                                    | 97.6                                   |
| Bank clearings outside N. Y. City       | 121.5                                  | 117.1                                   | 112.8                                  | 108.2                                   | 118.2                                  |
| Railway tonnage .....                   | 103.0                                  | 97.1                                    | 108.8                                  | 104.8                                   | 117.6                                  |
| Employment, N. Y. ....                  | 95.5                                   | 98.6                                    | 102.7                                  | 101.9                                   | 98.8                                   |
| Bank clearings, N. Y. ....              | 117.5                                  | 113.0                                   | 98.8                                   | 92.2                                    | 95.9                                   |
| Shares sold, N. Y. S. E. ....           | 179.0                                  | 199.1                                   | 152.4                                  | 117.3                                   | 89.6                                   |
| Per cent firms failing .....            | .37                                    | .36                                     | .32                                    | .41                                     | .50                                    |
| Exports .....                           | 106.5                                  | 78.9                                    | 96.7                                   | 99.9                                    | 95.5                                   |
| Foreign trade tonnage .....             | 105.8                                  | 107.6                                   | 121.8                                  | 121.0                                   | 139.5                                  |

\* *The American Economic Review*, vol. XI, No. 1, p. 74.

indices you could pretty well pick them off in the order in which the decline would and did come."<sup>11</sup>

Up to the time the present volume is being written, regular publication of the indices of production and trade as shown in Table No. 31 had not started because of the desire of the compilers to have the tabulation as comprehensive as possible from the beginning. It is planned to compile these statistics monthly and undoubtedly publication will begin in the near future—probably by the time this book has left the press. The report will prove of invaluable assistance in barometric work.

<sup>11</sup> *The American Economic Review*, vol. XI, No. 1, p. 72.

## CHAPTER VII

### BAROMETERS OF MARKETING

The second major function of business.—Distribution, or marketing, as it is more popularly known, constitutes with production the two main functions of business. In the broad sense, marketing is a phase of production as it comprehends the supplying of place and time utility to the commodities of every-day need. Statistics of marketing, therefore, serve to supplement those of production. The element of price, and incidentally of profit, enters into marketing records in contrast to production statistics which are almost entirely on a basis of volume.

Marketing statistics may be divided into four classes under an arbitrary arrangement predicated upon the nature of the information available. The four classes are: (1) commodity prices; (2) commodity shipments; (3) foreign trade; and (4) retail sales. Commodity prices and retail sales are naturally considered on a basis of value, and commodity shipments on a basis of volume. Foreign trade records give both value and volume.

#### COMMODITY PRICES

Commodity prices.—As has been shown in an earlier chapter, price has become the most important term in commerce. Men engage in business to gain profit, and profit is determined by the relationship between prices. Prices are never constant. At one time, a period of high prices exists, and, at another, low prices prevail. All commodities are not affected similarly, moreover, as there is a considerable lack of uniformity in the manner in which prices change.

The measurement of average prices, i.e., the establishment of a price level, is a problem of extreme difficulty. The ideal solution would be to have a single number which would reflect the current price on all commodities and which would take into consideration the relative importance of each commodity.

The construction of such an index number, however, would be impracticable, as is readily appreciable. The index numbers in current use are therefore considered to be approximate and to have an allowable margin of error up to 10 per cent.<sup>1</sup>

**American index numbers.**—No attempt has thus far been made to secure an index of general retail prices in this country. Retail quotations vary so widely even in a single community that the magnitude of the work involved in securing a comprehensive number of prices precludes its accomplishment.<sup>2</sup>

Wholesale prices do not vary so widely as retail, and representative quotations are readily obtainable. The difficulty lies in the choice of commodities and the relative weight to be ascribed to each. Although entirely different methods are employed in the construction of the two leading American index numbers, Bradstreet's and the Department of Labor, the results have proved quite uniform, as may be seen in Table No. 32.

**Bradstreet's index.**—The Bradstreet index is a number which represents the aggregate wholesale prices per pound of 96 staple commodities divided into 13 general groups. An index is constructed for each of the groups, and the sum of the separate indexes is the index for all. As the index is not on a percentage basis, no base period is necessary. The index number is published about the tenth of each month and represents the prices for the first day of the current month. A yearly index number is secured by averaging the index numbers for the twelve months. The index number as reported monthly for the ten-year period 1911-1920 is shown in Table No. 33.

**Department of Labor index.**—The Bureau of Labor Statistics of the Department of Labor compiles monthly an index number of wholesale prices. Unlike the Bradstreet index number, that of the Department of Labor is on a percentage basis. Originally the average prices during the period of 10 years

<sup>1</sup> "Today few, if any, competent judges doubt the validity of index numbers or the substantial accuracy of the results they show when properly constructed from carefully collected data. Indeed the danger at present is rather that the figures as published will be taken too absolutely as a complete representation of the facts about price fluctuations."—"Index Numbers of Wholesale Prices in the United States and Foreign Countries," W. C. Mitchell, U. S. Dept. of Labor Bul. No. 173, p. 10.

<sup>2</sup> The United States Department of Labor compiles an index of retail food prices which appears in its *Monthly Labor Review*; also a cost of living index which includes prices for services as well as for commodities.

CHART VIII.—BRADSTREET'S INDEX OF WHOLESALE PRICES: 1892-1920.

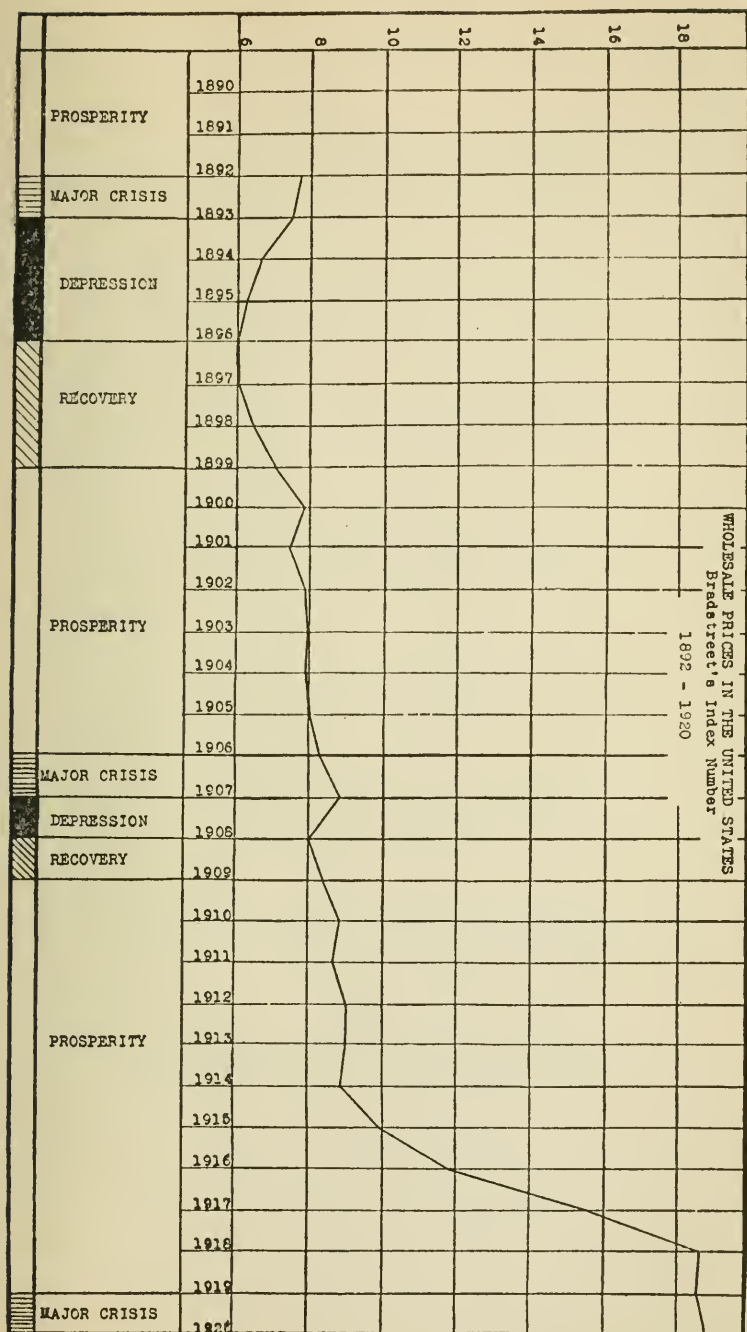




TABLE No. 32.—WHOLESALE PRICES IN THE UNITED STATES,  
1890-1920

| Year      | United States |                     |
|-----------|---------------|---------------------|
|           | Bradstreet's  | Department of Labor |
| 1890..... | \$.....       | 81                  |
| 1891..... | .....         | 82                  |
| 1892..... | 7.7769        | 76                  |
| 1893..... | 7.5324        | 77                  |
| 1894..... | 6.6846        | 69                  |
| 1895..... | 6.4346        | 70                  |
| 1896..... | 5.9124        | 66                  |
| 1897..... | 6.1159        | 67                  |
| 1898..... | 6.5713        | 69                  |
| 1899..... | 7.2100        | 74                  |
| 1900..... | 7.8839        | 80                  |
| 1901..... | 7.5746        | 79                  |
| 1902..... | 7.8759        | 85                  |
| 1903..... | 7.9364        | 85                  |
| 1904..... | 7.9187        | 86                  |
| 1905..... | 8.0987        | 85                  |
| 1906..... | 8.4176        | 88                  |
| 1907..... | 8.9045        | 94                  |
| 1908..... | 8.0094        | 91                  |
| 1909..... | 8.5153        | 97                  |
| 1910..... | 8.9881        | 99                  |
| 1911..... | 8.7129        | 95                  |
| 1912..... | 9.1867        | 101                 |
| 1913..... | 9.2115        | 100                 |
| 1914..... | 8.9985        | 100                 |
| 1915..... | 9.8530        | 101                 |
| 1916..... | 11.8236       | 124                 |
| 1917..... | 15.6385       | 176                 |
| 1918..... | 18.7117       | 196                 |
| 1919..... | 18.6642       | 212                 |
| 1920..... | 18.8096       | 243                 |

from 1890 to 1899 was taken as a base. The present method takes the year 1913 as the base period, and previous index numbers have been revised in accordance. Average monthly prices are taken rather than the price as of the first day. Over 300 commodities are included, in comparison with 96 used in the Bradstreet index.<sup>3</sup> The Department of Labor index is obviously more scientifically constructed than the Bradstreet. But the promptness with which the Bradstreet index is published, coupled with the uniformity with which it agrees with the Department index, makes the Bradstreet index of much more popular interest. The annual index number of the Department of Labor, by groups of commodities during the period from 1890 to 1920 is shown in Table No. 34.

<sup>3</sup> The December, 1920, index represented 326 commodities. *Monthly Labor Review*, February, 1921, p. 42.

TABLE No. 33.—BRADSTREET'S WHOLESALE PRICE INDEX\*

| <i>Month</i> | <i>1911</i> | <i>1912</i> | <i>1913</i> | <i>1914</i> | <i>1915</i> | <i>1916</i> | <i>1917</i> | <i>1918</i> | <i>1919</i> | <i>1920</i> |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| January..... | 8.3361      | 8.9493      | 9.4935      | 8.8857      | 9.1431      | 10.9163     | 13.7277     | 17.9436     | 18.5348     | 20.3638     |
| February.... | 8.7662      | 8.9578      | 9.4592      | 8.8619      | 9.6621      | 11.1415     | 13.9427     | 18.0506     | 17.6344     | 20.8690     |
| March.....   | 8.6917      | 8.9019      | 9.4052      | 8.8320      | 9.6197      | 11.3760     | 14.1360     | 18.0507     | 17.2244     | 20.7950     |
| 3 mos. av..  | 8.7647      | 8.9363      | 9.4526      | 8.8599      | 9.4750      | 11.1446     | 13.9355     | 18.0150     | 17.7979     | 20.6759     |
| April.....   | 8.5223      | 9.0978      | 9.2976      | 8.7562      | 9.7753      | 11.7598     | 14.5769     | 18.4431     | 17.2795     | 20.7124     |
| May.....     | 8.4586      | 9.2696      | 9.1394      | 8.6224      | 9.7978      | 11.7485     | 15.1203     | 18.8908     | 17.2376     | 20.7341     |
| June.....    | 8.3294      | 9.1017      | 9.0721      | 8.6220      | 9.7428      | 11.6887     | 15.4680     | 18.9818     | 18.0900     | 19.8752     |
| 3 mos. av..  | 8.5034      | 9.1564      | 9.1697      | 8.6669      | 9.7720      | 11.7323     | 15.0531     | 18.7719     | 17.5357     | 20.4406     |
| July.....    | 8.5935      | 9.1119      | 8.9522      | 8.6566      | 9.8698      | 11.5294     | 16.0680     | 19.1624     | 18.8964     | 19.3528     |
| August.....  | 8.6568      | 9.1595      | 9.0115      | 8.7087      | 9.8213      | 11.4414     | 16.3985     | 19.0937     | 20.0017     | 18.8273     |
| September... | 8.8191      | 9.2157      | 9.1006      | 9.7572      | 9.8034      | 11.7803     | 16.6441     | 19.0260     | 19.4720     | 17.9746     |
| 3 mos. av..  | 8.6898      | 9.1623      | 9.0214      | 9.0408      | 9.8315      | 11.5837     | 16.3702     | 19.0940     | 19.4567     | 18.7182     |
| October..... | 8.8065      | 9.4515      | 9.1526      | 9.2416      | 9.9774      | 12.0399     | 16.9135     | 18.9942     | 19.5215     | 16.9094     |
| November...  | 8.8922      | 9.4781      | 9.2252      | 8.8620      | 10.3768     | 12.7992     | 17.0701     | 18.8885     | 19.9026     | 15.6750     |
| December...  | 8.9824      | 9.5462      | 9.2290      | 9.0354      | 10.6473     | 13.6628     | 17.5966     | 19.0151     | 20.1756     | 13.6263     |
| 3 mos. av..  | 8.8937      | 9.4919      | 9.2023      | 9.0463      | 10.3338     | 12.8340     | 17.1934     | 18.9659     | 19.8666     | 15.4036     |
| Yearly av.   | 8.7129      | 9.1868      | 9.2115      | 8.9035      | 9.8531      | 11.8236     | 15.6385     | 18.7117     | 18.6642     | 18.8096     |

\* As reported in "Prentice-Hall Business Information Service."

TABLE No. 34.—UNITED STATES DEPARTMENT OF LABOR  
Index Numbers of Wholesale Prices, 1890 to 1920, by Groups of Commodities\*

| <i>Year</i> | <i>Farm products</i> | <i>Food, etc.</i> | <i>Cloths and clothing</i> | <i>Fuel and lighting</i> | <i>Metals and metal products</i> | <i>Building materials</i> | <i>Chemicals and drugs</i> | <i>House furnishing goods</i> | <i>Miscellaneous</i> | <i>All commodities</i> |
|-------------|----------------------|-------------------|----------------------------|--------------------------|----------------------------------|---------------------------|----------------------------|-------------------------------|----------------------|------------------------|
| 1890.....   | 68                   | 89                | 94                         | 69                       | 114                              | 72                        | 90                         | 72                            | 92                   | 81                     |
| 1891.....   | 73                   | 89                | 91                         | 68                       | 102                              | 70                        | 92                         | 72                            | 92                   | 82                     |
| 1892.....   | 66                   | 80                | 91                         | 66                       | 93                               | 67                        | 91                         | 71                            | 88                   | 76                     |
| 1893.....   | 67                   | 87                | 88                         | 66                       | 85                               | 68                        | 90                         | 68                            | 91                   | 77                     |
| 1894.....   | 59                   | 77                | 78                         | 61                       | 72                               | 66                        | 83                         | 67                            | 86                   | 69                     |
| 1895.....   | 60                   | 74                | 78                         | 67                       | 77                               | 64                        | 88                         | 62                            | 82                   | 70                     |
| 1896.....   | 54                   | 67                | 75                         | 69                       | 80                               | 63                        | 91                         | 58                            | 80                   | 66                     |
| 1897.....   | 58                   | 71                | 75                         | 62                       | 71                               | 62                        | 89                         | 56                            | 80                   | 67                     |
| 1898.....   | 61                   | 76                | 79                         | 61                       | 71                               | 65                        | 93                         | 61                            | 79                   | 69                     |
| 1899.....   | 62                   | 75                | 82                         | 71                       | 108                              | 71                        | 96                         | 62                            | 82                   | 74                     |
| 1900.....   | 69                   | 79                | 88                         | 80                       | 106                              | 76                        | 97                         | 69                            | 91                   | 80                     |
| 1901.....   | 73                   | 80                | 82                         | 78                       | 98                               | 73                        | 98                         | 69                            | 90                   | 79                     |
| 1902.....   | 81                   | 85                | 84                         | 92                       | 97                               | 77                        | 97                         | 73                            | 92                   | 85                     |
| 1903.....   | 75                   | 82                | 88                         | 105                      | 96                               | 80                        | 96                         | 74                            | 94                   | 85                     |
| 1904.....   | 80                   | 87                | 89                         | 91                       | 88                               | 80                        | 97                         | 73                            | 94                   | 86                     |
| 1905.....   | 77                   | 86                | 91                         | 87                       | 98                               | 85                        | 96                         | 71                            | 95                   | 85                     |
| 1906.....   | 78                   | 84                | 97                         | 90                       | 113                              | 94                        | 94                         | 74                            | 97                   | 88                     |
| 1907.....   | 85                   | 89                | 104                        | 93                       | 120                              | 97                        | 96                         | 80                            | 101                  | 94                     |
| 1908.....   | 85                   | 94                | 94                         | 91                       | 94                               | 92                        | 100                        | 78                            | 97                   | 91                     |
| 1909.....   | 97                   | 99                | 98                         | 88                       | 92                               | 97                        | 101                        | 77                            | 109                  | 97                     |
| 1910.....   | 103                  | 100               | 99                         | 84                       | 93                               | 101                       | 102                        | 80                            | 116                  | 99                     |
| 1911.....   | 93                   | 99                | 96                         | 82                       | 89                               | 101                       | 103                        | 85                            | 104                  | 95                     |
| 1912.....   | 101                  | 108               | 98                         | 89                       | 99                               | 100                       | 101                        | 91                            | 101                  | 101                    |
| 1913.....   | 100                  | 100               | 100                        | 100                      | 100                              | 100                       | 100                        | 100                           | 100                  | 100                    |
| 1914.....   | 103                  | 103               | 98                         | 96                       | 87                               | 97                        | 101                        | 99                            | 99                   | 100                    |
| 1915.....   | 105                  | 104               | 100                        | 93                       | 97                               | 94                        | 114                        | 99                            | 99                   | 101                    |
| 1916.....   | 122                  | 126               | 128                        | 119                      | 148                              | 101                       | 159                        | 115                           | 120                  | 124                    |
| 1917.....   | 189                  | 176               | 181                        | 175                      | 208                              | 124                       | 198                        | 144                           | 155                  | 176                    |
| 1918.....   | 220                  | 189               | 239                        | 163                      | 181                              | 151                       | 221                        | 196                           | 193                  | 196                    |
| 1919.....   | 234                  | 210               | 261                        | 173                      | 161                              | 192                       | 179                        | 236                           | 217                  | 212                    |
| 1920.....   | 218                  | 236               | 302                        | 238                      | 186                              | 308                       | 210                        | 366                           | 236                  | 243                    |

\* *Monthly Labor Review*, vol. XII, No. 2, p. 45.

Price fluctuations.—Rising prices signify a period of increasing business activity and lowering prices indicate a period of dullness. Although the manner in which prices change, and the cause of the changes have been previously discussed,

CHART IX—RELATIVE WHOLESALE PRICES: FARM PRODUCTS: 1890-1920.

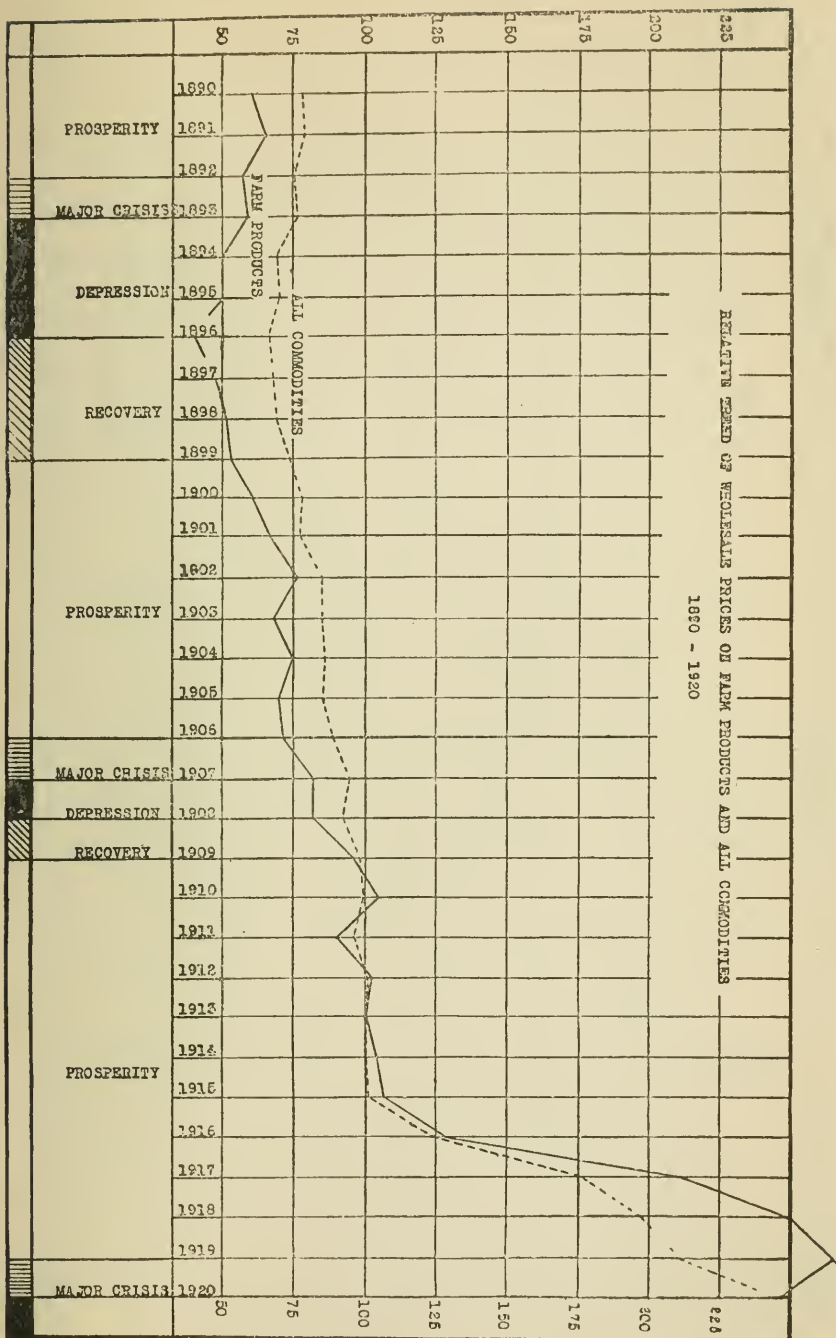


CHART X—RELATIVE WHOLESALE PRICES: FOOD: 1890-1920.

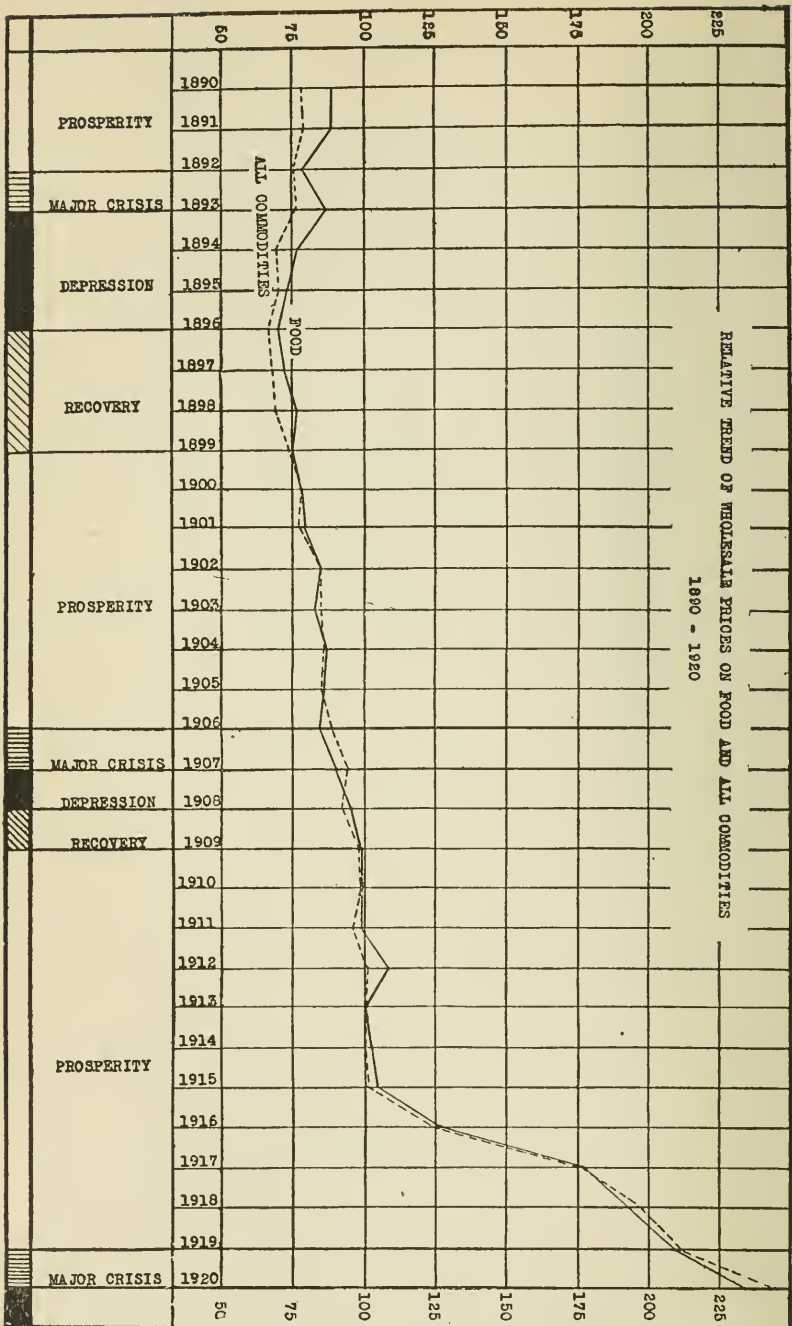


CHART XI.—RELATIVE WHOLESALE PRICES: CLOTHING: 1890-1920.

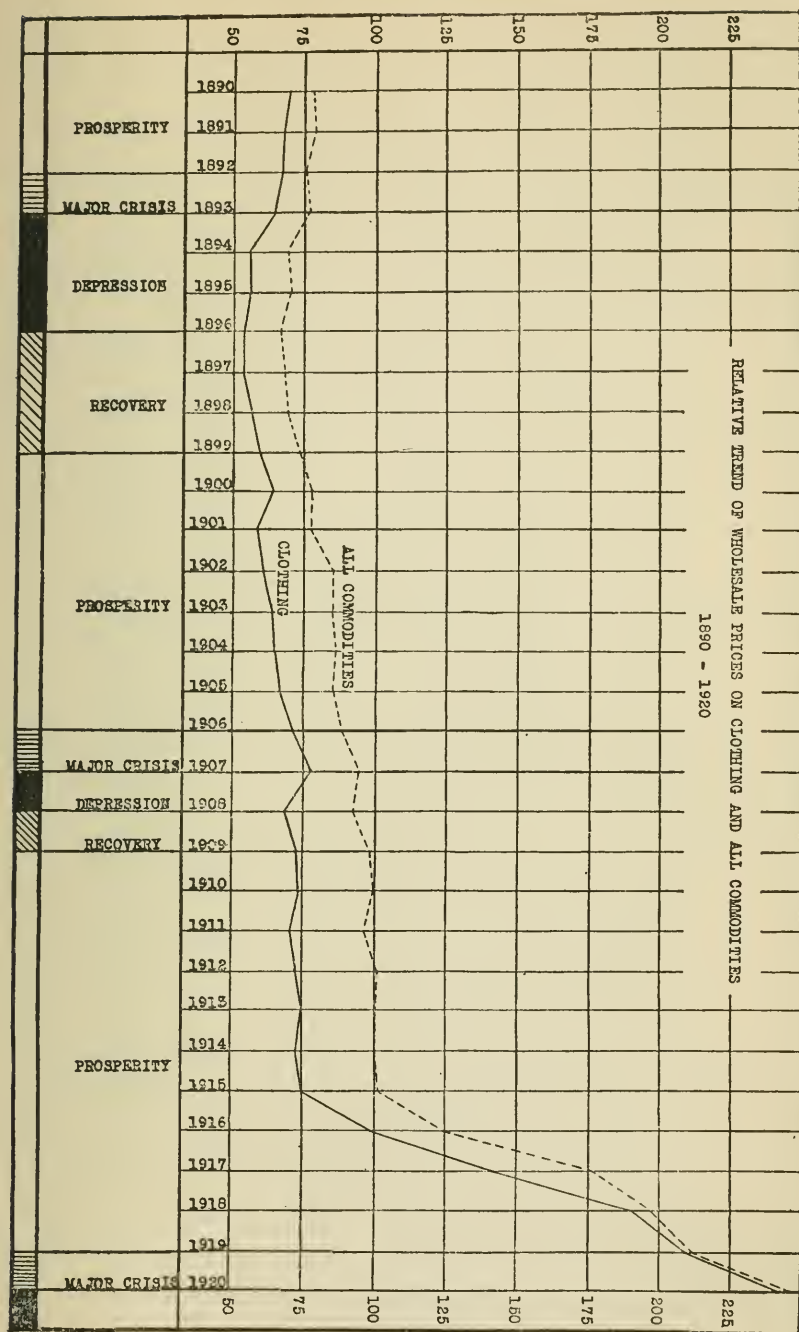




CHART XII.—RELATIVE WHOLESALE PRICES: FUEL: 1890-1920.

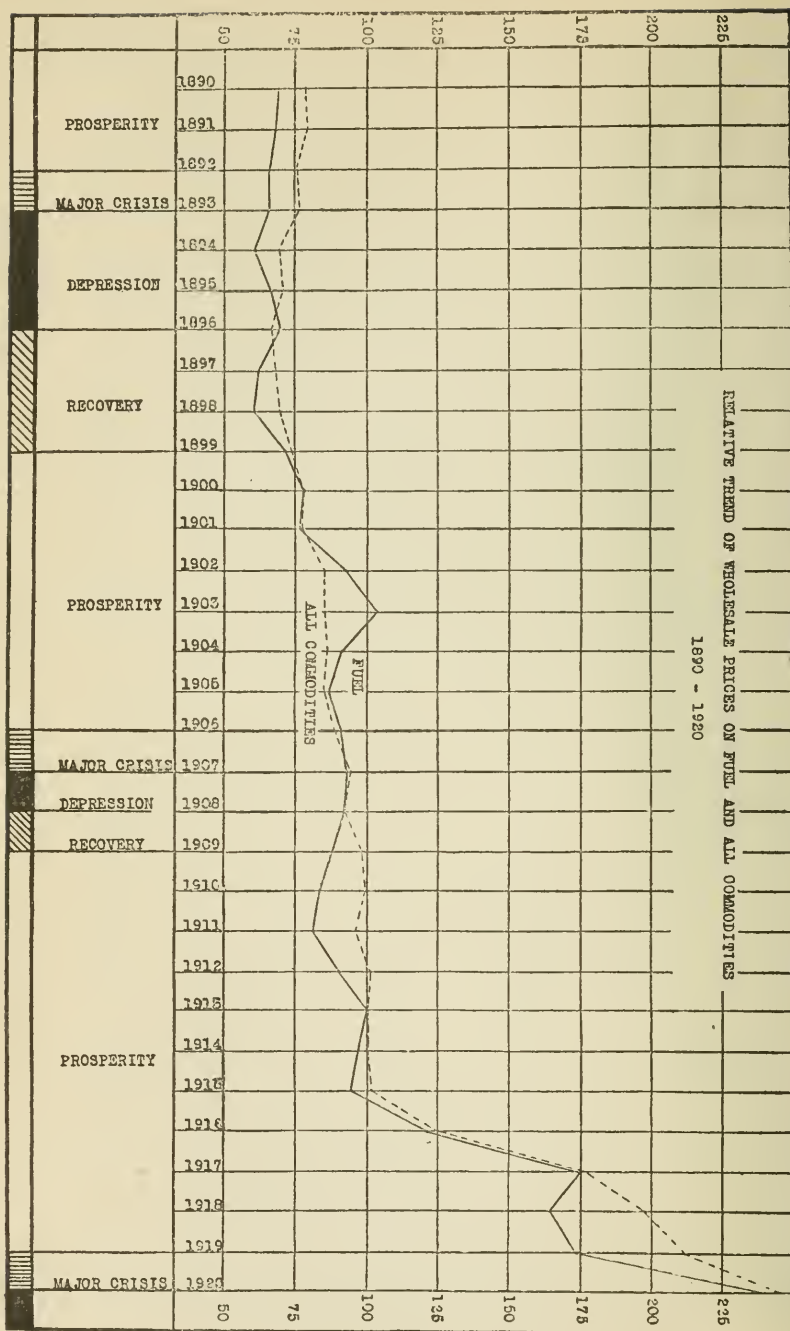


CHART XIII.—RELATIVE WHOLESALE PRICES: METALS: 1890-1920.

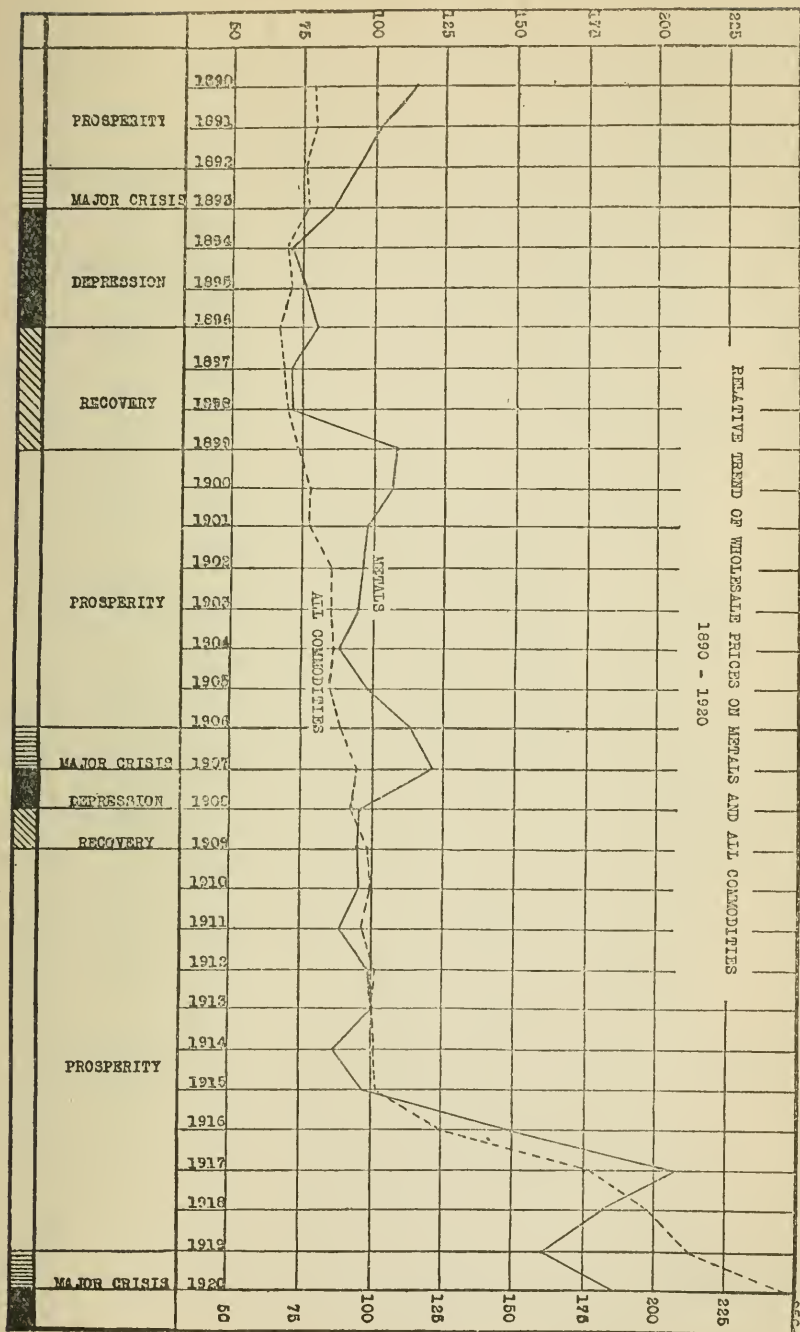


CHART XIV.—RELATIVE WHOLESALE PRICES: BUILDING MATERIALS: 1890-1920.

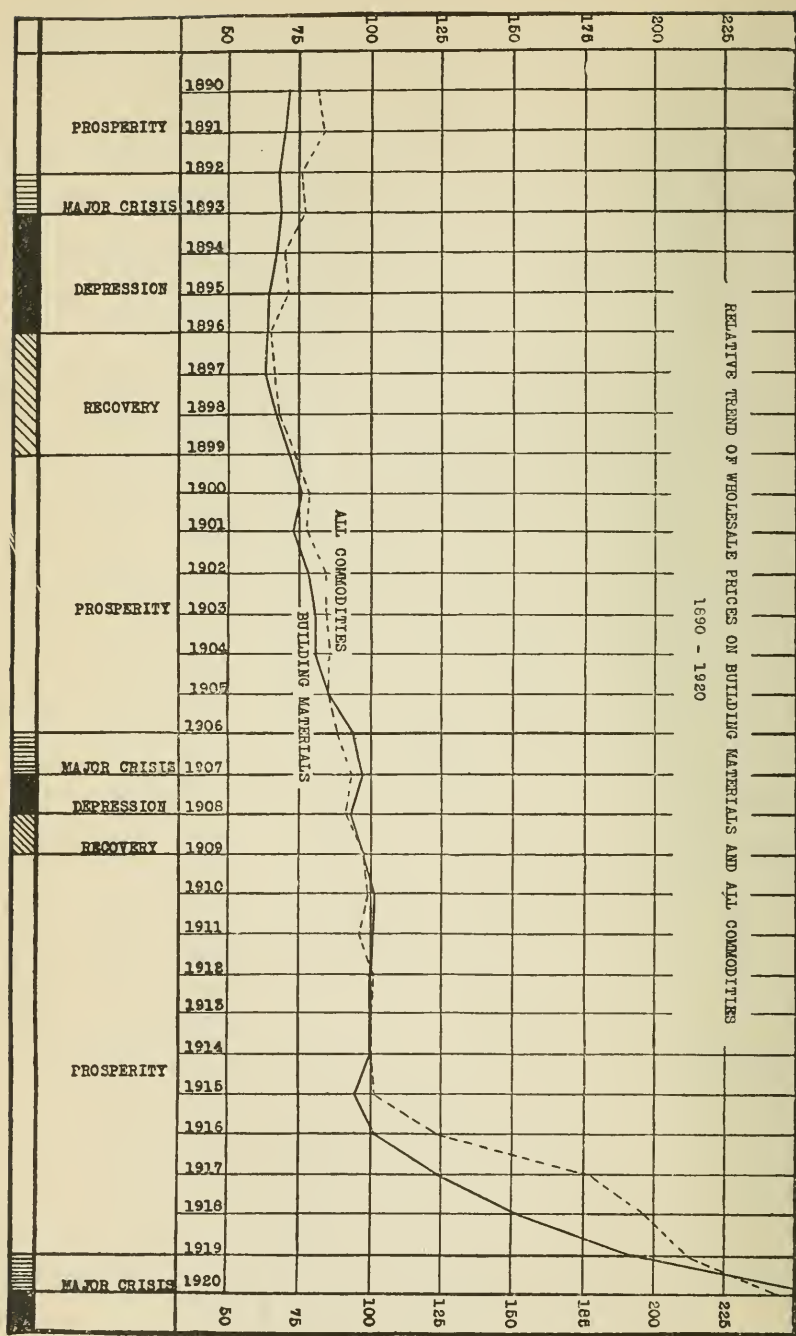


CHART XV.—RELATIVE WHOLESALE PRICES: CHEMICALS: 1890-1920.

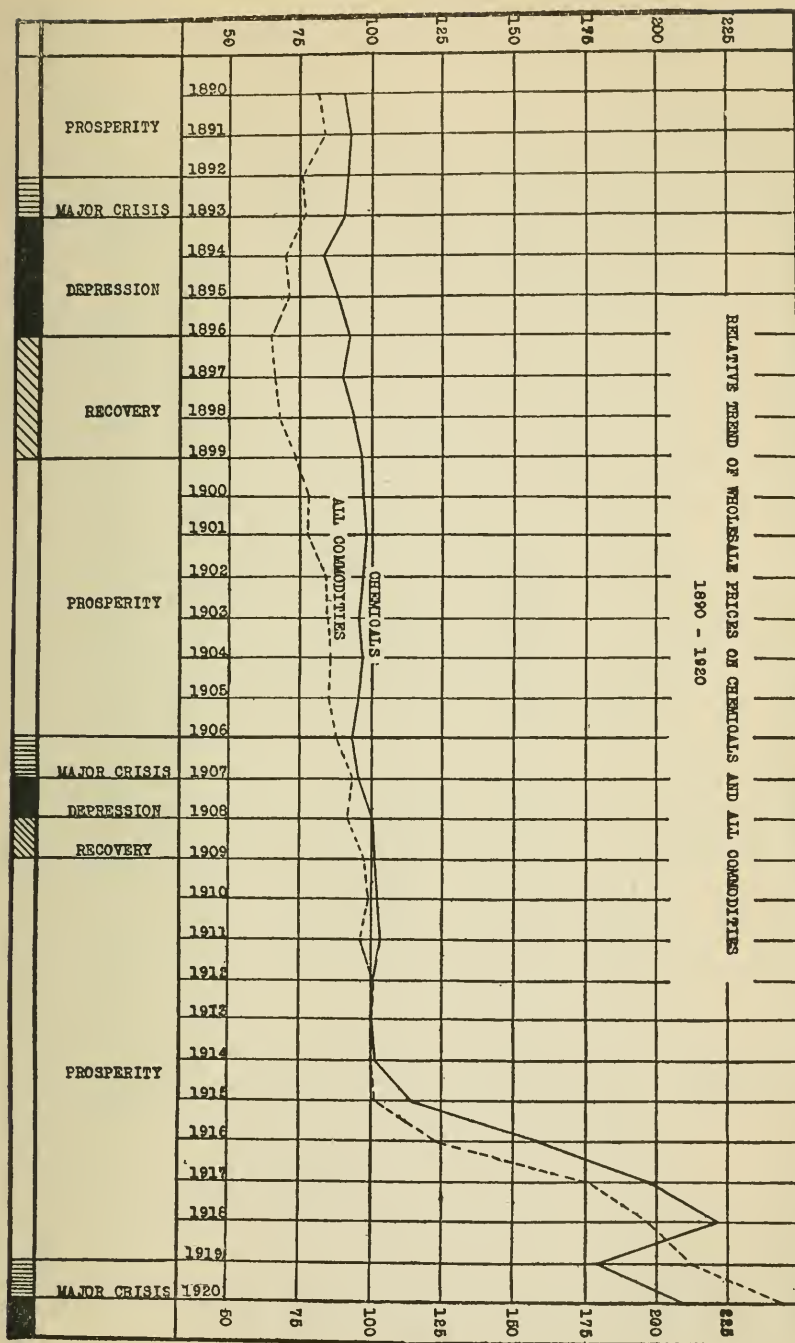
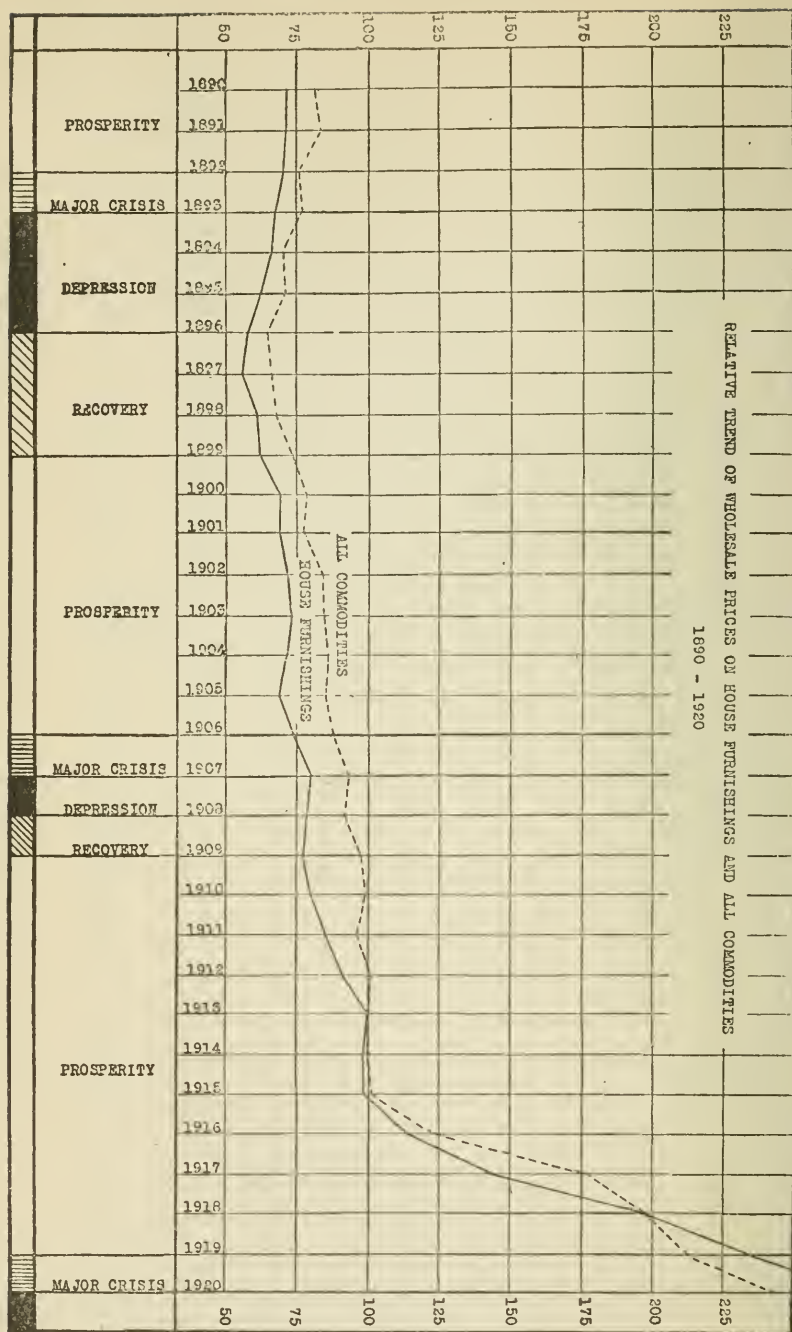


CHART XVI.—RELATIVE WHOLESALE PRICES: HOUSE FURNISHINGS: 1890-1920.



a third important aspect of the price situation is found in the total lack of uniformity in the fluctuations. This is clearly indicated in Table No. 34.

During the period from 1896 to 1913, a gradually rising price movement was in progress throughout the United States. The index number rose from 66 in the former to 100 in the latter year. But this appreciation was not uniform as to time or to commodities. In four of the years—1901, 1905, 1908, and 1911—a decline occurred. During this period, chemicals advanced in price but 10 per cent, in comparison with a 25 per cent gain in metal prices, a 50 per cent increase in food prices, and almost a 100 per cent gain in the prices of farm products. The widest range in fluctuations is shown in farm products (54-100), house furnishing goods (56-100), fuel (61-100), and food (67-100). The narrowest range is found in chemicals (83-100), cloths (75-100), and metals (72-100).

During the war period from 1914 to 1920, prices advanced with unprecedented rapidity. The Department of Labor index for 1920 showed an advance of 143 per cent over that of 1913. House furnishing goods made the greatest gain, 266 per cent. Building material prices went up 208 per cent; clothing, 202 per cent; fuel, 138 per cent; food, 136 per cent; farm products, 134 per cent; chemicals, 121 per cent, and metals, 108 per cent.

The price decline in 1920-1921.—The index number of the Department of Labor reached its maximum in May 1920—272, or an advance of 172 per cent over the level of prices in 1913. Of the nine groups of commodities which are considered in the construction of the index, but two reached their highest point in this month. As is shown in Table No. 35, clothing prices were highest in March, farm products and metals in April, while in May, when the aggregate was greatest, food and building materials reached their peak. It is significant to note that at this time, farm products and metals prices had already started downward.

The usual sequence of price changes in a falling market was well illustrated. Raw materials, notably silk, wool, hides, cotton, and copper, declined rapidly during the spring and early summer months of 1920; wholesale prices were reduced during the late summer and autumn months; retail prices, as laggard as usual, did not fall off until late winter, and wages,



TABLE No. 35.—THE DECLINE IN WHOLESALE PRICES, 1920-1921\*

| <i>Month</i> | <i>Farm products</i> | <i>Food, etc.</i> | <i>Cloths and clothing</i> | <i>Fuel and lighting</i> | <i>Metals and metal products</i> | <i>Building materials</i> | <i>Chemicals and drugs</i> | <i>House furnishing goods</i> | <i>Miscellaneous</i> | <i>All commodities</i> |
|--------------|----------------------|-------------------|----------------------------|--------------------------|----------------------------------|---------------------------|----------------------------|-------------------------------|----------------------|------------------------|
| <b>1920</b>  |                      |                   |                            |                          |                                  |                           |                            |                               |                      |                        |
| January..... | <b>246</b>           | 253               | 350                        | 184                      | 177                              | 268                       | 189                        | 324                           | 227                  | 248                    |
| February.... | 237                  | 244               | 356                        | 187                      | 189                              | 300                       | 197                        | 329                           | 227                  | 249                    |
| March.....   | 239                  | 246               | <b>356</b>                 | 192                      | 192                              | 325                       | 205                        | 329                           | 230                  | 253                    |
| April.....   | <b>246</b>           | 270               | 353                        | 213                      | <b>195</b>                       | <b>341</b>                | 212                        | 331                           | 238                  | 265                    |
| May.....     | 244                  | <b>287</b>        | 347                        | 235                      | 193                              | <b>341</b>                | 215                        | 339                           | 246                  | 272                    |
| June.....    | 243                  | 279               | 335                        | 246                      | 190                              | 337                       | 218                        | 362                           | <b>247</b>           | 269                    |
| July.....    | 236                  | 268               | 317                        | 252                      | 191                              | 333                       | 217                        | 362                           | 243                  | 262                    |
| August.....  | 222                  | 235               | 299                        | 268                      | 193                              | 328                       | 216                        | 363                           | 240                  | 250                    |
| September... | 210                  | 223               | 278                        | <b>284</b>               | 192                              | 318                       | 222                        | <b>371</b>                    | 239                  | 242                    |
| October..... | 182                  | 204               | 257                        | 282                      | 184                              | 313                       | 216                        | <b>371</b>                    | 229                  | 225                    |
| November...  | 165                  | 195               | 234                        | 258                      | 170                              | 274                       | 207                        | 369                           | 220                  | 207                    |
| December...  | 144                  | 172               | 220                        | 236                      | 157                              | 266                       | 188                        | 346                           | 205                  | 189                    |
| <b>1921</b>  |                      |                   |                            |                          |                                  |                           |                            |                               |                      |                        |
| January..... | 136                  | 162               | 208                        | 228                      | 152                              | 239                       | 182                        | 283                           | 190                  | 177                    |
| February.... | 129                  | 150               | 198                        | 218                      | 146                              | 221                       | 178                        | 277                           | 180                  | 167                    |
| March.....   | 125                  | 150               | 192                        | 207                      | 139                              | 208                       | 171                        | 275                           | 167                  | 162                    |
| April.....   | 115                  | 141               | 186                        | 199                      | 138                              | 203                       | 168                        | 274                           | 154                  | 148                    |
| May.....     | 117                  | 133               | 181                        | 194                      | 138                              | 202                       | 166                        | 262                           | 151                  | 151                    |
| June.....    | 113                  | 132               | 180                        | 187                      | 132                              | 202                       | 166                        | 250                           | 150                  | 148                    |

The maximum for each group is shown in bold face figures.

\* *Monthly Labor Review*, vol. XII, No. 5, p. 38.

the last of all to change, were not materially affected until the summer of 1921.

The amazing feature of the decline was the rapidity with which it was accomplished. The advance in prices which developed at an unprecedented rate during the preceding five years was lost in a period of slightly over twelve months. The current belief had been that the decline would be decidedly gradual and that it would require a period at least as long as that during which prices rose. Certain leading economists had declared that a permanently higher level of prices had been reached.<sup>4</sup>

**Relationship of farm product prices to general prices.**—The trend of general commodity prices follows the trend of the prices of farm products with surprising uniformity. In but three years out of the thirty, from 1890 to 1920, has the change in the general level of commodity prices, as compiled by the United States Department of Labor and as illustrated in Table No. 36, failed to coincide with the trend in farm products. This substantiates the belief that price movements are largely attributable to agricultural production.

**Commodity prices as a business barometer.**—The entire objective of business forecasting resolves itself into an attempt to predetermine price movements. Peculiarly enough, the starting-point must be prices as they are and as they have been. Experience has shown that the lower prices fall, the greater will be the subsequent rise; and the higher prices advance, the larger will be the ensuing decline. The dullness which pervades business when prices are falling is certain to change to activity when prices again advance; and the activity which permeates commerce when prices are rising is equally certain to change to depression when prices begin their inevitable fall.

<sup>4</sup>“Business men should face the facts. To talk reverently of 1913-1914 prices is to speak a dead language today. Price recessions have been insignificant. The reason is that we are on a new high-price level which will be found a stubborn reality.”—Prof. Irving Fisher in *The American Review of Reviews*, June, 1919, vol. LIX, No. 6, p. 598.

“If the Federal Reserve Board succeeds in checking the speculative movement there is prospect of a gradual improvement in production and a fairly stable level of prices in 1920.”—Prof. Wesley C. Mitchell in *Bankers Statistics Corporation Weekly Service*, February 10, 1920, vol. I, No. 17, sec. 2, p. 6.

“With the general conclusion that we are not likely to witness any considerable fall in the general level of prices in the *immediate* future, I find myself in substantial accord.”—Prof. H. G. Moulton in *The Journal of Political Economy*, November, 1919, vol. XXVII, No. 9, p. 782.

TABLE No. 36.—RELATIVE CHANGES IN WHOLESALE PRICES OF FARM PRODUCTS AND ALL COMMODITIES, 1890-1920\*

| <i>Year</i> | <i>Farm products</i> | <i>All commodities</i> |
|-------------|----------------------|------------------------|
| 1890.....   | .....                | .....                  |
| 1891.....   | Plus 5               | Plus 1                 |
| 1892.....   | Minus 7              | Minus 6                |
| 1893.....   | Plus 1               | Plus 1                 |
| 1894.....   | Minus 8              | Minus 8                |
| 1895.....   | Plus 1               | Plus 1                 |
| 1896.....   | Minus 6              | Minus 4                |
| 1897.....   | Plus 4               | Plus 1                 |
| 1898.....   | Plus 3               | Plus 2                 |
| 1899.....   | Plus 1               | Plus 5                 |
| 1900.....   | Plus 7               | Plus 6                 |
| 1901.....   | Plus 4               | Minus 1                |
| 1902.....   | Plus 8               | Plus 6                 |
| 1903.....   | Minus 6              | No change              |
| 1904.....   | Plus 5               | Plus 1                 |
| 1905.....   | Minus 3              | Minus 1                |
| 1906.....   | Plus 1               | Plus 3                 |
| 1907.....   | Plus 7               | Plus 6                 |
| 1908.....   | No change            | Minus 3                |
| 1909.....   | Plus 12              | Plus 6                 |
| 1910.....   | Plus 6               | Plus 2                 |
| 1911.....   | Minus 10             | Minus 4                |
| 1912.....   | Plus 8               | Plus 6                 |
| 1913.....   | Minus 1              | Minus 1                |
| 1914.....   | Plus 3               | No change              |
| 1915.....   | Plus 2               | Plus 1                 |
| 1916.....   | Plus 17              | Plus 23                |
| 1917.....   | Plus 67              | Plus 52                |
| 1918.....   | Plus 51              | Plus 20                |
| 1919.....   | Plus 14              | Plus 16                |
| 1920.....   | Minus 16             | Plus 29                |

\* Compiled from the index numbers of the Department of Labor.

When the trend of prices changes, wholesale prices are first affected, primarily raw materials such as cotton, wool, silk, hides, wheat, coffee, and sugar. Semi-finished products and finished articles follow in order. Retail prices lag behind. A change in the price trend, i.e., an appreciable advance after a continued decline, or vice versa, in any of the raw materials named, is always significant of a change in business conditions.

Under normal conditions, commodity prices in general depend chiefly upon the prices of farm products which in turn depend upon the harvests.

TABLE No. 37.—IDLE CAR FIGURES (FIRST OF MONTH REPORTS OF AMERICAN RAILROAD ASSOCIATION)\*

| Month          | 1913   | 1914    | 1915    | 1916     | 1917     | 1918     | 1919    | 1920     |
|----------------|--------|---------|---------|----------|----------|----------|---------|----------|
| January.....   | 17,058 | 188,850 | ‡       | 47,081   | †62,247  | †89,995  | 296,344 | †26,375  |
| February.....  | 37,260 | 209,678 | 279,411 | 20,299   | †109,988 | †98,044  | 354,452 | †84,598  |
| March.....     | 31,381 | 153,907 | 321,747 | †19,537  | †130,082 | †138,102 | 473,080 | †63,366  |
| April.....     | 57,988 | 139,512 | 327,084 | 4,638    | †144,797 | †28,127  | 426,424 | †80,976  |
| May.....       | 39,799 | 228,879 | 291,303 | 33,361   | †148,627 | 12,035   | 365,560 | †69,077  |
| June.....      | 50,908 | 241,802 | 299,928 | 57,693   | †106,649 | 71,224   | 284,828 | †103,954 |
| July.....      | 63,704 | 219,542 | 275,636 | 52,234   | †77,144  | 62,806   | 188,265 | †122,247 |
| August.....    | 58,455 | 196,665 | 265,364 | 9,762    | †33,776  | 56,434   | 88,629  | †124,226 |
| September..... | 58,306 | 163,326 | 185,009 | †19,873  | †34,605  | 35,922   | †17,312 | †104,021 |
| October.....   | 10,374 | 131,027 | 78,341  | †60,697  | †70,380  | 45,740   | †52,101 | †78,225  |
| November.....  | †1,842 | 170,096 | 28,268  | †114,908 | †140,012 | 91,691   | †49,433 | †51,556  |
| December.....  | 57,254 | ‡       | 37,402  | †107,778 | †117,131 | 156,827  | 7,223   | 30,022   |

\* As reported by *Babson's Desk Sheet*.

‡ Reports temporarily suspended.

† Net shortage.

## COMMODITY SHIPMENTS

**Transportation of merchandise.**—The volume of merchandise which is being transported by the steam railroads of the United States affords a serviceable criterion for measuring business activity. Steamships on inland waterways and coast-wise lines carry a substantial volume of freight, but the great bulk of shipments moves by rail. The most satisfactory method by which transportation conditions may be judged is through the relationship between the number of freight cars available and the number in use at any given time, and through the number of freight cars which are being loaded.

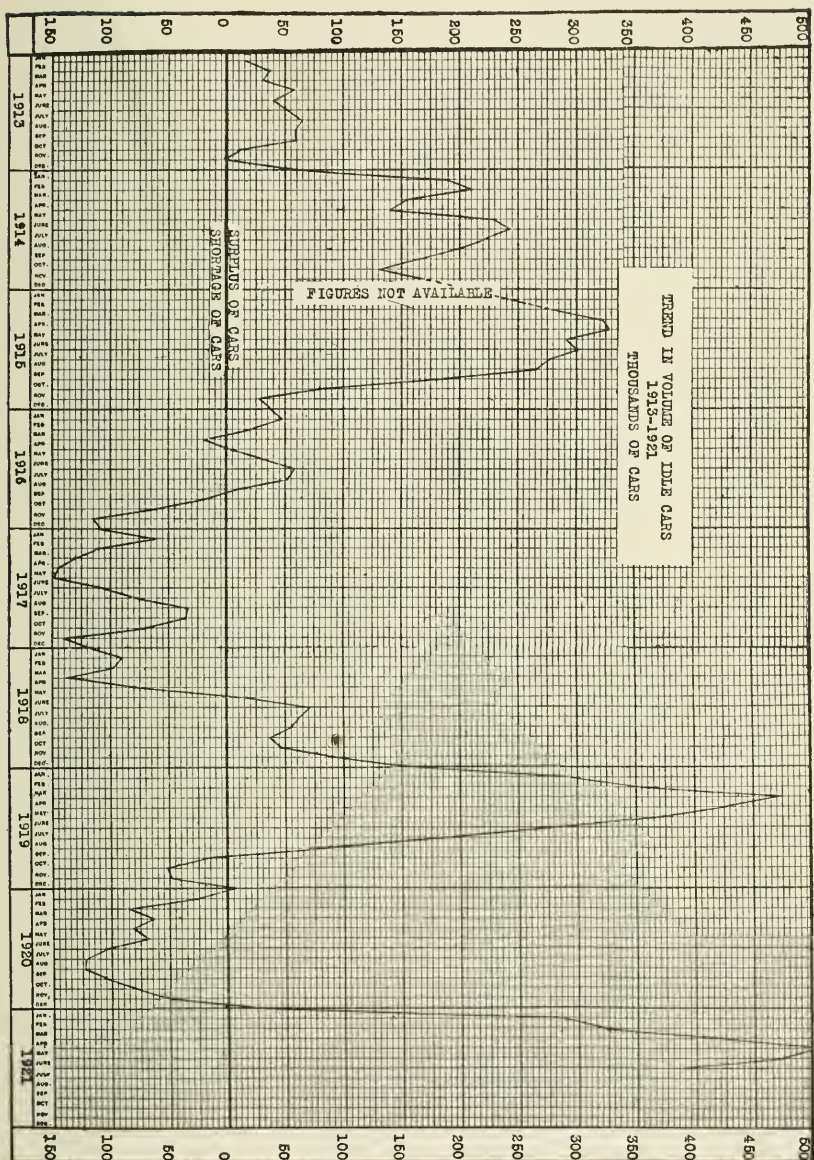
**Idle cars.**—The number of idle freight cars indicates the relative volume of commodity shipments. Freight cars are considered to be “used” when they are actually carrying goods, or in the process of loading or unloading. The cars are “idle” when they are in serviceable condition and are not being used. Cars not in serviceable condition are termed “bad order” cars. The number of idle cars naturally increases when business is comparatively inactive and diminishes when conditions improve. In times of activity, the surplus of cars is occasionally eliminated and an actual shortage develops.

A gradual increase in the number of idle cars, as is shown in Table No. 37 in the gain from 17,058 in January, 1913, to 241,802 in June, 1914, from 91,691 in November, 1918,—the armistice month—to 473,080 in the following March, and from a shortage of 124,226 in August, 1920, to a surplus of 30,022 in the following December, clearly reflected a distinct slackening in business. In reverse fashion, a gradual decrease in the number of idle cars, as is shown in the decline from a surplus of 327,084 in April, 1915, to a shortage of 138,102 in March, 1918, and from a surplus of 473,080 in March, 1919, to a shortage of 124,226 in August, 1920, indicated increasing activity.

Idle car statistics are not conclusive, however, as changes in the number of bad order cars affect the number of idle cars independent of traffic conditions. A reduction in the number of idle cars may be largely attributable to an increase in the number of bad order cars as was the case in May of 1921 during which month the number of bad order cars increased from 309,971 to 341,337. Moreover, there is a seasonal variation in the volume of idle equipment, the surplus declining from February to October and increasing from October to February.



CHART XVII.—TREND IN VOLUME OF IDLE FREIGHT CARS: 1913-1921





**Car loadings.**—The second method of measuring the volume of commodity shipments is through the number of freight cars which are being loaded from week to week. Unfortunately this information has been compiled but for a short time and its use for comparative purposes is therefore limited. Table No. 38 shows the weekly car loadings for the principal United States railroads for the years 1919 and 1920. The inactivity which prevailed during the early months of 1919 following the armistice is plainly indicated in the figures for February and March when the weekly loadings averaged less than 700,000. The effect of the new crops is evidenced in the

TABLE No. 38.—WEEKLY CAR LOADINGS OF UNITED STATES RAILROADS, 1919-1920\*

| <i>Week ending</i> | <i>1920</i> | <i>1919</i> | <i>Week ending</i> | <i>1920</i> | <i>1919</i> |
|--------------------|-------------|-------------|--------------------|-------------|-------------|
| Jan. 7.....        | 830,000     | 723,000     | July 1.....        | 839,000     | 743,000     |
| 14.....            | 840,000     | 758,000     | 8.....             | 757,000     | 809,000     |
| 21.....            | 804,000     | 734,000     | 15.....            | 923,000     | 902,000     |
| 28.....            | 803,000     | 718,000     | 22.....            | 915,000     | 909,000     |
|                    |             |             | 29.....            | 914,000     | 914,000     |
| Feb. 4.....        | 762,000     | 692,000     |                    |             |             |
| 11.....            | 786,000     | 687,000     | Aug. 5.....        | 942,000     | 872,000     |
| 18.....            | 772,000     | 700,000     | 12.....            | 962,000     | 832,000     |
| 25.....            | 783,000     | 666,000     | 19.....            | 964,000     | 913,000     |
|                    |             |             | 26.....            | 985,000     | 951,000     |
| Mar. 4.....        | 811,000     | 675,000     |                    |             |             |
| 11.....            | 819,000     | 701,000     | Sept. 2.....       | 947,000     | 904,000     |
| 18.....            | 855,000     | 699,000     | 9.....             | 872,000     | 946,000     |
| 25.....            | 900,000     | 713,000     | 16.....            | 983,000     | 994,000     |
|                    |             |             | 23.....            | 994,000     | 987,000     |
| Apr. 1.....        | 858,000     | 688,000     | 30.....            | 975,000     | 957,000     |
| 8.....             | 801,000     | 711,000     |                    |             |             |
| 15.....            | 601,000     | 706,000     | Oct. 7.....        | 1,009,000   | 982,000     |
| 22.....            | 717,000     | 715,000     | 14.....            | 1,005,000   | 972,000     |
| 29.....            | 800,000     | 752,000     | 21.....            | 1,010,000   | 977,000     |
|                    |             |             | 28.....            | 973,000     | 935,000     |
| May 6.....         | 843,000     | 753,000     |                    |             |             |
| 13.....            | 843,000     | 739,000     | Nov. 4.....        | 910,000     | 826,000     |
| 20.....            | 862,000     | 777,000     | 11.....            | 919,000     | 808,000     |
| 27.....            | 898,000     | 763,000     | 18.....            | 880,000     | 854,000     |
|                    |             |             | 25.....            | 797,000     | 739,000     |
| June 3.....        | 788,000     | 776,000     |                    |             |             |
| 10.....            | 878,000     | 807,000     | Dec. 2.....        | 872,000     | 837,000     |
| 17.....            | 869,000     | 807,000     | 9.....             | 834,000     | 761,000     |
| 24.....            | 869,000     | 845,000     | 16.....            | 796,000     | 806,000     |
|                    |             |             | 23.....            | 639,000     | 684,000     |
|                    |             |             | 30.....            | 598,000     | 745,000     |

\* As compiled by the Car Service Division of the American Railway Association and reported in the *Railway Age*.

comparatively large number of cars which are loaded during September, October, and November of each year.

Commodity shipments as business barometers.—As a criterion for judging the relative activity of business, the volume of commodity shipments serves admirably. But an analysis of the records indicates that the trend follows rather than precedes changes in general conditions. Indications that business was slowing up were apparent during the late spring and early summer months of 1920; yet car loadings continued to increase until late fall and it was at the very end of the year before an appreciable decline ensued.

An excellent feature of the reports on both idle cars and car loadings, however, is the promptness with which the information is made available. The figures are compiled weekly by the car service division of the American Railway Association and are published within two weeks from the time to which the figures apply. This only partly offsets the major disadvantage of studying an index which follows rather than precedes the general trend.<sup>5</sup>

#### FOREIGN TRADE

New conditions in foreign trade.—The European war exerted a profound influence upon foreign trade, not only of the

<sup>5</sup> Unfortunately few publications (*Railway Age* is a notable exception) reprint the weekly freight car loading statistics completely. The complete weekly report gives loadings according to geographical districts and commodities handled for the current and preceding year. The report for the week of May 28, 1921, divided total car loadings of 787,237 as follows:

| <i>Commodities</i>            | <i>1921</i> | <i>1920</i> | <i>1919</i> |
|-------------------------------|-------------|-------------|-------------|
| Grain and grain products..... | 46,337      | 33,038      | 35,523      |
| Live stock .....              | 27,518      | 28,677      | 28,624      |
| Coal .....                    | 164,870     | 174,612     | 153,642     |
| Coke .....                    | 5,605       | 11,680      | .....       |
| Forest products .....         | 50,277      | 62,247      | 60,545      |
| Ore .....                     | 28,673      | 69,426      | 54,247      |
| Merchandise .....             | 215,095     | 150,595     | .....       |
| Miscellaneous .....           | 248,862     | 367,932     | 431,180     |
| Total .....                   | 787,237     | 898,207     | 763,761     |

An analysis of this nature is obviously of greater barometric value than the simple statement of the total cars loaded each week. Until such time as the periodicals deem it advisable to print such a detailed analysis, it would be well to procure a copy of the weekly statement direct from the Car Service Division of the American Railway Association at Washington, D. C.

United States but of all other countries as well. Total United States exports grew from \$2,484,000,000 in 1913 to \$8,228,000,000 in 1920; and imports increased from \$1,792,000,000 to \$5,279,000,000 in the same period. The excess of exports over imports in the trade of the United States with Europe amounted to almost \$20,000,000,000 in the period from January 1, 1915, to December 31, 1920. The increases were due to a high level of prices more than to a gain in the volume of trade, however.

The unusual conditions which attended foreign trade during and following the war militate against the use of the figures in the customary way for barometric purposes. But even greater significance than ever before is to be found in current trade analysis.

**Foreign trade of the United States.**—The foreign trade of the United States for the period from 1867 to 1920 is shown in Table No. 39. Prior to the outbreak of the World War in 1914 a situation existed materially different from that which has developed since that time. Exports exceeded imports by a fair margin from year to year, but invisible debits against this country, notably interest charges on foreign capital invested in the United States, offset the American trade credit balance and made total debits and credits practically equal.<sup>6</sup> In the six-year period from 1915 to 1920 inclusive, however, total exports exceeded total imports by no less than \$18,230,000,000. Furthermore, the annual excess of invisible debit items over credit items which formerly averaged \$500,000,000, has been converted into an excess of credit items approximating more than \$100,000,000 yearly and probably closer to \$300,000,000.<sup>7</sup> The difficulty in arranging for the

\* During the fifteen years immediately preceding the European War, the average excess of merchandise exports over imports was about \$500,000,000. During the same period invisible debit items approximated the same figures as is shown in the appended tabulation:

|                                                        |               |
|--------------------------------------------------------|---------------|
| Interest on investments in United States.....          | \$175,000,000 |
| Shipping charges .....                                 | 25,000,000    |
| Remittances by foreign nationals in United States..... | 125,000,000   |
| Expenditures of American tourists abroad.....          | 150,000,000   |
| Insurance and miscellaneous.....                       | 25,000,000    |
| Total .....                                            | \$500,000,000 |

"War Costs and Their Financing," E. L. Bogart, p. 72.

<sup>7</sup> The largest single item of invisible trade is interest charges. American investments abroad now exceed \$15,000,000,000 which alone creates an interest credit of about \$750,000,000 annually to the United States. "The Chase Economic Bulletin," vol. I, No. 1, p. 3.

TABLE No. 39.—FOREIGN TRADE OF THE UNITED STATES, 1867-1920  
(in millions of dollars)

| <i>Year</i> | <i>Imports</i> | <i>Exports</i> | <i>Excess of<br/>exports</i> | <i>Excess of<br/>imports</i> |
|-------------|----------------|----------------|------------------------------|------------------------------|
| 1867.....   | 371            | 310            | ....                         | 61                           |
| 1868.....   | 368            | 281            | ....                         | 86                           |
| 1869.....   | 438            | 337            | ....                         | 101                          |
| 1870.....   | 461            | 403            | ....                         | 57                           |
| 1871.....   | 573            | 460            | ....                         | 112                          |
| 1872.....   | 655            | 468            | ....                         | 187                          |
| 1873.....   | 595            | 567            | ....                         | 27                           |
| 1874.....   | 562            | 569            | 7                            | ....                         |
| 1875.....   | 503            | 510            | 7                            | ....                         |
| 1876.....   | 427            | 590            | 163                          | ....                         |
| 1877.....   | 480            | 620            | 139                          | ....                         |
| 1878.....   | 431            | 737            | 305                          | ....                         |
| 1879.....   | 513            | 765            | 251                          | ....                         |
| 1880.....   | 696            | 889            | 192                          | ....                         |
| 1881.....   | 670            | 833            | 163                          | ....                         |
| 1882.....   | 752            | 767            | 15                           | ....                         |
| 1883.....   | 687            | 795            | 108                          | ....                         |
| 1884.....   | 629            | 749            | 120                          | ....                         |
| 1885.....   | 587            | 688            | 100                          | ....                         |
| 1886.....   | 663            | 713            | 49                           | ....                         |
| 1887.....   | 708            | 715            | 6                            | ....                         |
| 1888.....   | 725            | 691            | ....                         | 33                           |
| 1889.....   | 770            | 727            | 56                           | ....                         |
| 1890.....   | 823            | 857            | 34                           | ....                         |
| 1891.....   | 828            | 970            | 142                          | ....                         |
| 1892.....   | 840            | 938            | 97                           | ....                         |
| 1893.....   | 776            | 875            | 99                           | ....                         |
| 1894.....   | 676            | 825            | 148                          | ....                         |
| 1895.....   | 801            | 824            | 23                           | ....                         |
| 1896.....   | 681            | 1,005          | 324                          | ....                         |
| 1897.....   | 742            | 1,099          | 357                          | ....                         |
| 1898.....   | 634            | 1,255          | 620                          | ....                         |
| 1899.....   | 798            | 1,275          | 476                          | ....                         |
| 1900.....   | 829            | 1,477          | 648                          | ....                         |
| 1901.....   | 880            | 1,465          | 584                          | ....                         |
| 1902.....   | 969            | 1,360          | 391                          | ....                         |
| 1903.....   | 995            | 1,484          | 489                          | ....                         |
| 1904.....   | 1,035          | 1,451          | 415                          | ....                         |
| 1905.....   | 1,179          | 1,626          | 447                          | ....                         |
| 1906.....   | 1,320          | 1,798          | 477                          | ....                         |
| 1907.....   | 1,423          | 1,923          | 500                          | ....                         |
| 1908.....   | 1,116          | 1,752          | 636                          | ....                         |
| 1909.....   | 1,475          | 1,728          | 252                          | ....                         |
| 1910.....   | 1,562          | 1,866          | 303                          | ....                         |
| 1911.....   | 1,532          | 2,092          | 560                          | ....                         |
| 1912.....   | 1,818          | 2,399          | 581                          | ....                         |
| 1913.....   | 1,792          | 2,484          | 691                          | ....                         |
| 1914.....   | 1,789          | 3,113          | 324                          | ....                         |
| 1915.....   | 1,778          | 3,554          | 1,776                        | ....                         |
| 1916.....   | 2,391          | 5,482          | 3,091                        | ....                         |
| 1917.....   | 2,952          | 6,233          | 3,281                        | ....                         |
| 1918.....   | 3,031          | 6,149          | 3,117                        | ....                         |
| 1919.....   | 3,904          | 7,920          | 4,016                        | ....                         |
| 1920.....   | 5,279          | 8,228          | 2,949                        | ..                           |

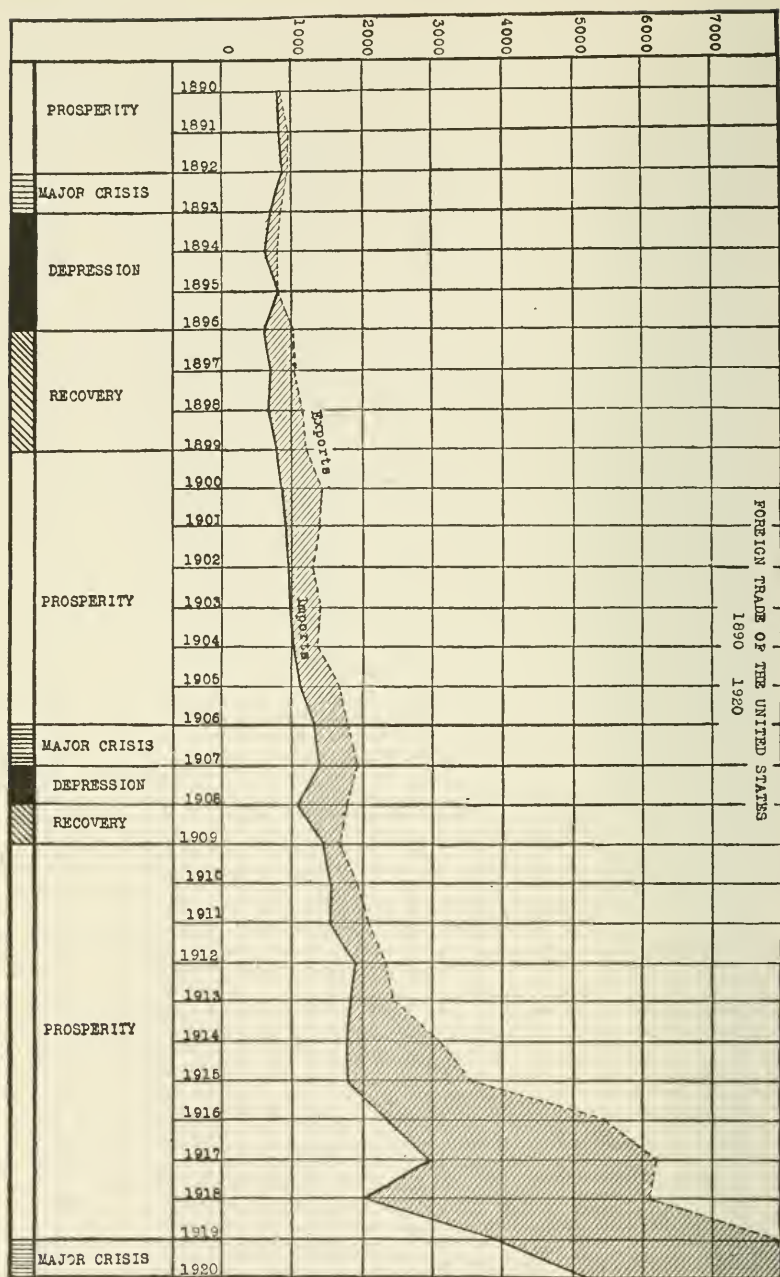




TABLE No. 40.—MONTHLY MERCHANDISE EXPORTS OF THE UNITED STATES, 1911-1920\*

| Month        | (in dollars)  |               |               |               |               |               |               |               |               |               |  |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--|
|              | 1911          | 1912          | 1913          | 1914          | 1915          | 1916          | 1917          | 1918          | 1919          | 1920          |  |
| January..... | 197,083,391   | 202,446,273   | 227,032,930   | 204,066,603   | 267,879,313   | 330,036,410   | 613,324,582   | 504,797,306   | 622,552,783   | 722,063,790   |  |
| February.... | 175,937,305   | 198,844,326   | 193,996,942   | 173,920,145   | 299,805,869   | 401,783,974   | 467,648,406   | 411,361,970   | 585,097,012   | 645,145,225   |  |
| March.....   | 161,933,204   | 205,411,462   | 187,426,711   | 187,499,234   | 296,611,852   | 410,742,034   | 553,985,699   | 522,900,238   | 603,141,648   | 819,556,037   |  |
| 1st quarter  | 534,973,900   | 606,702,061   | 608,456,583   | 565,485,982   | 864,297,014   | 1,142,562,418 | 1,634,958,687 | 1,439,039,514 | 1,810,791,443 | 2,186,765,052 |  |
| April.....   | 157,987,550   | 179,300,342   | 199,813,438   | 162,552,570   | 294,745,913   | 398,568,532   | 529,927,815   | 500,442,906   | 714,800,137   | 684,319,392   |  |
| May.....     | 153,152,353   | 175,380,058   | 194,607,422   | 161,732,619   | 274,218,142   | 474,803,637   | 550,063,934   | 550,924,791   | 603,967,025   | 745,523,223   |  |
| June.....    | 141,706,737   | 138,233,742   | 163,404,916   | 157,072,044   | 268,547,416   | 464,685,956   | 573,593,117   | 483,799,399   | 928,379,203   | 629,376,757   |  |
| 2d quarter   | 452,846,640   | 492,914,142   | 557,825,776   | 481,357,233   | 837,511,471   | 1,338,058,125 | 1,653,384,866 | 1,535,167,096 | 2,247,146,365 | 2,059,219,372 |  |
| July.....    | 127,696,954   | 148,885,355   | 160,990,778   | 154,138,947   | 268,974,610   | 444,713,964   | 372,758,414   | 507,467,769   | 568,687,515   | 651,136,478   |  |
| August.....  | 144,185,193   | 167,844,871   | 187,909,020   | 110,367,494   | 261,025,230   | 510,167,438   | 488,655,597   | 527,013,916   | 646,054,425   | 578,182,691   |  |
| September... | 195,798,647   | 199,678,062   | 218,240,001   | 156,052,333   | 300,676,822   | 514,924,134   | 455,997,947   | 550,395,994   | 595,214,266   | 604,686,259   |  |
| 3d quarter   | 467,680,794   | 516,408,288   | 567,139,799   | 420,558,774   | 830,676,662   | 1,469,805,536 | 1,317,411,958 | 1,584,877,679 | 1,809,956,206 | 1,834,005,428 |  |
| October....  | 210,365,516   | 254,633,504   | 271,861,464   | 194,711,170   | 328,018,300   | 492,813,916   | 543,232,000   | 501,860,550   | 631,619,416   | 751,211,370   |  |
| November...  | 201,752,760   | 278,244,191   | 245,539,042   | 205,878,333   | 327,670,413   | 516,167,324   | 488,193,185   | 522,236,594   | 740,921,163   | 676,706,011   |  |
| December...  | 224,907,136   | 250,315,807   | 233,195,628   | 245,622,558   | 359,306,492   | 523,233,780   | 593,864,280   | 565,886,112   | 681,415,999   | 720,852,515   |  |
| 4th quarter  | 637,025,412   | 783,193,502   | 750,596,134   | 646,632,061   | 1,014,995,205 | 1,532,215,022 | 1,625,289,465 | 1,589,983,256 | 2,053,956,578 | 2,148,769,896 |  |
| Year.....    | 2,092,526,746 | 2,399,217,993 | 2,484,018,292 | 2,113,624,050 | 3,547,480,352 | 5,482,641,101 | 6,231,244,976 | 6,149,087,545 | 7,921,850,592 | 8,228,759,748 |  |

\* As reported in "Prentice-Hall Business Information Service."



payment of American credits abroad has proved a potent contributing factor to the economic impasse which has followed the termination of the war.

The detailed monthly summary of foreign trade for the period from 1911 to 1920 inclusive is shown in Tables No. 40 and No. 44, which give respectively merchandise exports and imports. The gain in trade from 1915 to 1920 was not so great as appears on the surface. The general increase in price levels caused the value of the shipments to advance without a corresponding change in the volume.

Export and import figures have not proved an exceptionally good barometer of domestic business conditions. As is shown in Table No. 40, the value of exports for the last six months of 1920 was substantially greater than in the corresponding period of 1919 despite the fact that business condi-

TABLE No. 41.—FOREIGN TRADE OF THE UNITED STATES BY GRAND DIVISIONS, 1913 AND 1920\*

|                        | 1913            | 1920            |
|------------------------|-----------------|-----------------|
| EUROPE                 |                 |                 |
| Exports .....          | \$1,499,000,000 | \$4,466,000,000 |
| Imports .....          | 864,000,000     | 1,227,000,000   |
| Excess of exports..... | \$635,000,000   | \$3,239,000,000 |
| NORTH AMERICA          |                 |                 |
| Exports .....          | \$601,000,000   | \$1,929,000,000 |
| Imports .....          | 389,000,000     | 1,663,000,000   |
| Excess of exports..... | \$212,000,000   | \$266,000,000   |
| SOUTH AMERICA          |                 |                 |
| Imports .....          | \$198,000,000   | \$761,000,000   |
| Exports .....          | 146,000,000     | 623,000,000     |
| Excess of imports..... | \$52,000,000    | \$138,000,000   |
| ASIA AND OCEANIA       |                 |                 |
| Imports .....          | \$316,000,000   | \$1,476,000,000 |
| Exports .....          | 207,000,000     | 1,043,000,000   |
| Excess of imports..... | \$109,000,000   | \$433,000,000   |
| AFRICA                 |                 |                 |
| Exports .....          | \$28,000,000    | \$165,000,000   |
| Imports .....          | 23,000,000      | 150,000,000     |
| Excess of exports..... | \$5,000,000     | \$15,000,000    |

\* Compiled from "Monthly Summary of the Foreign Commerce of the United States," December, 1920, p. 7.

tions were much better in 1919. Exports did not fall off until February of 1921, almost an entire year after the downward trend had begun.

TABLE No. 42.—LEADING EXPORTS OF THE UNITED STATES, VALUES AND RANKING, 1918-1919-1920\*

(in millions of dollars)

| <i>Article</i>              | <i>1920</i>  |             | <i>1919</i>  |             | <i>1918</i>  |             |
|-----------------------------|--------------|-------------|--------------|-------------|--------------|-------------|
|                             | <i>Value</i> | <i>Rank</i> | <i>Value</i> | <i>Rank</i> | <i>Value</i> | <i>Rank</i> |
| Cotton (raw) .....          | 1,136        | 1           | 1,137        | 2           | 674          | 5           |
| Iron and steel (mfrs.) .... | 1,112        | 2           | 968          | 3           | 1,035        | 1           |
| Breadstuffs .....           | 1,079        | 3           | 920          | 4           | 801          | 3           |
| Oils .....                  | 608          | 4           | 444          | 6           | 373          | 6           |
| Meat and dairy products...  | 544          | 5           | 1,160        | 1           | 941          | 2           |
| Cotton (manufactured) ....  | 402          | 6           | 273          | 8           | 181          | 9           |
| Coal .....                  | 349          | 7           | 119          | 14          | 107          | 11          |
| Automobiles .....           | 298          | 8           | 151          | 9           | 96           | 12          |
| Tobacco .....               | 274          | 9           | 513          | 5           | 795          | 4           |
| Leather .....               | 190          | 10          | 303          | 7           | 91           | 13          |
| Wood .....                  | 186          | 11          | 136          | 10          | 87           | 14          |
| Copper .....                | 133          | 12          | 121          | 13          | 200          | 8           |
| Chemicals .....             | 168          | 13          | 133          | 11          | 165          | 10          |
| Electrical machinery .....  | 101          | 14          | 89           | 17          | 59           | 15          |
| Sugar .....                 | 95           | 15          | 114          | 15          | 27           | 21          |
| Paper .....                 | 89           | 16          | 86           | 18          | 54           | 17          |
| Rubber (mfrs.) .....        | 85           | 17          | 53           | 19          | 31           | 20          |
| Cars (excl. autos) .....    | 84           | 18          | 110          | 16          | 55           | 16          |
| Fruits and nuts .....       | 84           | 19          | 126          | 12          | 32           | 18          |
| Explosives .....            | 56           | 20          | 28           | 23          | 243          | 7           |
| Agricultural implements ... | 46           | 21          | 41           | 21          | 32           | 19          |
| Wool .....                  | 44           | 22          | 47           | 20          | 19           | 22          |
| Fertilizer .....            | 36           | 23          | 20           | 25          | 4            | ..          |
| Naval stores .....          | 34           | 24          | 31           | 22          | 10           | ..          |
| Furs .....                  | 32           | 25          | 23           | 24          | 11           | ..          |

\* Compiled from "Monthly Summary of Foreign Commerce of the United States, December, 1920."

**Merchandise exports.**—In studying commodity exports from month to month, allowance must be made for seasonal tendencies. Exports are usually at their peak during the fall months owing to the movement of American crops abroad. As is shown in Table No. 41, Europe is the best customer of American producers as exports to that Grand Division exceed in value the aggregate to all other continents. This indicates clearly the effect of European conditions upon the United States.

The relative importance of the commodities which are affected by changing conditions in foreign trade is shown in Table No. 42 which gives the value and ranking of the principal articles of American exportation. Raw cotton, iron and steel manufactures, breadstuffs, oils, and meat and dairy products, comprise over 50 per cent of the total exports in value.

The exports which are of greatest significance from the standpoint of industrial activity are those of manufactured products. Not only is the margin of profit greater on this class, but the production affords employment at high wages to American labor. Table No. 43 shows the relationship between the value of manufactured products exported and total exports for the calendar years 1910 to 1920. The value of manufactured products for the period averaged 67.08 per cent, or slightly more than two-thirds of the total.

TABLE No. 43.—EXPORTS OF MANUFACTURED PRODUCTS IN THE UNITED STATES, 1910-1920\*

| <i>Year</i> | <i>Total domestic exports</i> | <i>Manufactures</i> | <i>Percentage of manufactures</i> |
|-------------|-------------------------------|---------------------|-----------------------------------|
| 1910.....   | \$1,829,022,000               | \$1,083,680,000     | 59.27                             |
| 1911.....   | 2,058,413,000                 | 1,275,062,000       | 61.94                             |
| 1912.....   | 2,362,696,000                 | 1,426,556,000       | 60.38                             |
| 1913.....   | 2,448,284,000                 | 1,501,721,000       | 61.34                             |
| 1914.....   | 2,071,057,000                 | 1,282,744,000       | 61.94                             |
| 1915.....   | 3,493,230,000                 | 2,341,366,000       | 67.03                             |
| 1916.....   | 5,422,642,000                 | 4,185,663,000       | 77.20                             |
| 1917.....   | 6,169,617,000                 | 4,827,027,000       | 78.26                             |
| 1918.....   | 6,047,874,000                 | 4,528,331,000       | 74.88                             |
| 1919.....   | 7,749,815,000                 | 5,448,366,000       | 70.30                             |
| 1920.....   | 8,080,480,000                 | 5,280,252,000       | 65.34                             |

\* Compiled from "Statistical Abstract of the United States," 1920, p. 474.

**Effect upon domestic industry.**—The relationship of foreign trade to domestic industry can be established by comparing the value of manufactured products exported to the total value of domestic manufactures as reported by the special censuses taken in 1899, 1904, 1909, 1914, and 1919. The total value of manufactures in 1899 was \$11,406,927,000 and the value of manufactures exported was \$685,141,000 or 6.0 per cent. In 1904, the total value was \$14,793,903,000 and exports were \$832,447,000 or 5.6 per cent. In 1909, the total value was \$20,672,051,000 and exports were \$973,971,000 or 4.7 per cent. In 1914, the total value was \$24,246,434,000 and exports were \$1,282,744,000 or 5.3 per cent. In

TABLE No. 44.—MONTHLY MERCHANDISE IMPORTS OF THE UNITED STATES, 1911-1920\*

(in dollars)

| Month        | 1911          | 1912          | 1913          | 1914          | 1915          | 1916          | 1917          | 1918          | 1919          | 1920          |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| January..... | 130,561,234   | 143,386,408   | 163,063,438   | 154,742,923   | 122,148,317   | 184,350,942   | 241,793,282   | 233,942,081   | 212,992,644   | 473,823,869   |
| February.... | 121,694,740   | 134,188,438   | 149,913,918   | 148,044,776   | 125,123,391   | 193,935,117   | 199,479,996   | 207,715,540   | 235,124,274   | 467,402,320   |
| March.....   | 139,041,928   | 157,577,038   | 155,445,498   | 182,555,304   | 157,982,016   | 213,589,785   | 270,257,139   | 242,162,017   | 267,596,289   | 523,923,236   |
| 1st quarter  | 391,297,902   | 435,351,884   | 468,422,854   | 485,343,003   | 405,253,724   | 591,875,844   | 711,530,417   | 683,819,638   | 715,713,207   | 1,465,149,425 |
| April.....   | 119,826,706   | 162,571,159   | 146,194,461   | 173,762,114   | 160,376,106   | 218,236,397   | 253,935,966   | 278,981,327   | 272,956,949   | 495,738,571   |
| May.....     | 129,814,160   | 155,697,886   | 133,723,713   | 164,281,515   | 142,284,851   | 229,188,957   | 280,727,164   | 322,852,898   | 328,925,593   | 431,004,944   |
| June.....    | 122,807,184   | 131,030,797   | 131,245,877   | 157,529,450   | 157,695,140   | 245,795,438   | 306,622,939   | 260,350,071   | 292,915,543   | 552,605,534   |
| 2d quarter.  | 372,448,050   | 449,299,842   | 411,164,051   | 495,573,079   | 460,556,097   | 693,220,792   | 841,286,069   | 862,184,296   | 894,798,085   | 1,479,349,049 |
| July.....    | 118,054,204   | 148,666,738   | 139,061,770   | 159,677,291   | 143,244,737   | 182,722,938   | 225,926,352   | 241,877,758   | 343,746,070   | 537,118,971   |
| August.....  | 125,945,385   | 154,756,770   | 137,651,553   | 129,767,890   | 141,804,202   | 199,316,480   | 267,854,767   | 273,002,914   | 307,293,078   | 513,111,488   |
| September... | 125,171,644   | 144,819,493   | 171,084,843   | 139,710,611   | 151,236,026   | 164,038,614   | 236,196,898   | 261,668,644   | 435,448,747   | 363,290,301   |
| 3d quarter.  | 369,171,233   | 448,243,001   | 447,798,166   | 429,155,792   | 436,284,965   | 546,078,032   | 729,978,017   | 776,549,316   | 1,086,487,895 | 1,413,520,760 |
| October..... | 132,605,751   | 177,987,986   | 132,949,302   | 138,080,520   | 149,172,729   | 178,658,730   | 221,227,405   | 246,764,906   | 401,845,150   | 334,055,078   |
| November...  | 126,162,022   | 153,094,896   | 148,236,536   | 126,467,062   | 155,496,675   | 176,967,749   | 220,534,550   | 251,008,037   | 424,851,667   | 321,211,080   |
| December...  | 140,674,202   | 154,095,444   | 184,025,571   | 114,656,545   | 171,832,505   | 204,834,188   | 227,911,497   | 210,886,517   | 380,710,323   | 266,112,819   |
| 4th quarter  | 399,441,975   | 485,178,328   | 465,211,409   | 379,204,127   | 476,501,909   | 560,460,667   | 669,673,452   | 708,659,460   | 1,207,407,140 | 921,378,977   |
| Year.....    | 1,532,359,160 | 1,818,073,055 | 1,792,596,480 | 1,789,276,001 | 1,778,596,695 | 2,391,635,335 | 2,952,467,955 | 3,031,212,710 | 3,904,406,327 | 5,279,398,211 |

\* As reported in "Prentice-Hall Business Information Service."

1919, the total value was \$62,588,905,000 and exports were \$5,448,366,000 or 8.7 per cent.<sup>8</sup> The effect of changes in foreign demand for American manufactures upon domestic industry is apparently less important than is currently believed since the total exports average only about 5 per cent of the total productivity.

**Merchandise imports.**—A monthly summary of the merchandise imports of the United States for the period from

TABLE No. 45.—LEADING IMPORTS OF THE UNITED STATES, VALUES AND RANKING, 1918-1919-1920\*  
(in millions of dollars)

| <i>Article</i>        | <i>1920</i>  |             | <i>1919</i>  |             | <i>1918</i>  |             |
|-----------------------|--------------|-------------|--------------|-------------|--------------|-------------|
|                       | <i>Value</i> | <i>Rank</i> | <i>Value</i> | <i>Rank</i> | <i>Value</i> | <i>Rank</i> |
| Sugar .....           | 1,017        | 1           | 394          | 2           | 242          | 2           |
| Silk .....            | 376          | 2           | 395          | 1           | 221          | 4           |
| Cotton .....          | 275          | 3           | 123          | 10          | 81           | 13          |
| Coffee .....          | 252          | 4           | 261          | 4           | 99           | 9           |
| Rubber .....          | 248          | 5           | 221          | 6           | 149          | 6           |
|                       |              |             |              |             |              |             |
| Hides and skins ..... | 243          | 6           | 306          | 3           | 108          | 8           |
| Fibers .....          | 234          | 7           | 176          | 7           | 226          | 3           |
| Chemicals .....       | 211          | 8           | 126          | 9           | 168          | 5           |
| Wood .....            | 209          | 9           | 111          | 11          | 98           | 10          |
| Wool .....            | 184          | 10          | 235          | 5           | 273          | 1           |
|                       |              |             |              |             |              |             |
| Oils .....            | 181          | 11          | 164          | 8           | 140          | 7           |
| Breadstuffs .....     | 125          | 12          | 50           | 22          | 66           | 15          |
| Fruits and nuts ..... | 116          | 13          | 95           | 13          | 74           | 14          |
| Seeds .....           | 102          | 14          | 69           | 16          | 45           | 18          |
| Tobacco .....         | 97           | 15          | 86           | 14          | 60           | 17          |
|                       |              |             |              |             |              |             |
| Paper .....           | 84           | 16          | 53           | 20          | 42           | 19          |
| Furs .....            | 84           | 17          | 69           | 15          | 32           | 21          |
| Precious stones ..... | 75           | 18          | 105          | 12          | 24           | 25          |
| Tin .....             | 73           | 19          | 50           | 21          | 93           | 12          |
| Copper .....          | 67           | 20          | 62           | 17          | 97           | 11          |
|                       |              |             |              |             |              |             |
| Meat products .....   | 64           | 21          | 37           | 24          | 61           | 16          |
| Cocoa .....           | 54           | 22          | 57           | 19          | 37           | 20          |
| Fertilizer .....      | 51           | 23          | 11           | ..          | 4            | ..          |
| Iron and steel .....  | 50           | 24          | 26           | ..          | 24           | ..          |
| Vegetables .....      | 40           | 25          | 40           | 23          | 32           | 22          |

\* Compiled from "Monthly Summary of Foreign Commerce of the United States," December, 1920.

<sup>8</sup> Value of manufactures in 1899, 1904, 1909, and 1914 from "Statistical Abstract of the United States," 1920, p. 192; in 1919 from Preliminary Statement of Department of Commerce, May 24, 1921. Value of manufactures exported from "Statistical Abstract of the United States," 1920, p. 784. The slight discrepancy with Table No. 43 is due to differences in fiscal and calendar years.



1911 to 1920 is shown in Table No. 44. Interpretation of the figures of trade since 1915 are subject to the same qualification as in the case of exports: high price levels cause the totals to increase without a corresponding increase in the volume. The principal articles of importation, with value and ranking, are shown in Table No. 45. Reference has been made in the preceding chapter to the volume of imports of raw materials in connection with the measurement of productive activity. The importation of articles of luxury, such as silk, furs, and precious stones, affords a criterion for judging the purchasing power of the country, as was evidenced in the increase of 300 per cent in the value of precious stones imported in 1919 over 1918.

Under post-war conditions, merchandise imports are of particular significance as a criterion of conditions abroad. International debts are paid in merchandise; gold is used only when production is deficient. As Europe is the chief debtor of the United States, a study of the volume of imports received from the continent from month to month affords a means of determining the extent of economic recovery that is developing.

**Balance of trade.**—The difference between the total value of merchandise exports and imports is known as the balance of trade. In addition to the annual trade balance of the United States which appears in Table No. 39, a detailed statement of the balances by months during the period from 1911 to 1920 is given in Table No. 46. While it would be impracticable to expect that total exports and total imports should always be equal, yet there is no gainsaying the fact that a large excess on either side creates an unsatisfactory position. Exports can only be paid in imports, and it is economic folly for one nation to sell abroad unless it is also willing to buy abroad. The enormous favorable trade balance of \$19,933,000,000 which arose during the period from 1915 to 1920 in the commerce between Europe and the United States has created a most difficult economic problem.

**Foreign trade as a business barometer.**—The influence of foreign trade upon domestic conditions has been overemphasized. Although manufactured articles comprise two-thirds of the total value of American exports, the amount represents but 5 per cent of the total value of United States manufac-

TABLE No. 46.—MONTHLY BALANCE OF TRADE OF THE UNITED STATES, 1911-1920\*

(in dollars)

| Month        | 1911        | 1912        | 1913        | 1914        | 1915          | 1916          | 1917          | 1918          | 1919          | 1920          |
|--------------|-------------|-------------|-------------|-------------|---------------|---------------|---------------|---------------|---------------|---------------|
| January..... | 66,522,157  | 58,859,865  | 63,969,492  | 49,323,680  | 145,730,996   | 145,685,468   | 371,531,300   | 270,855,225   | 409,560,139   | 248,239,921   |
| February.... | 54,262,565  | 64,655,888  | 44,083,024  | 25,875,369  | 174,682,478   | 207,848,857   | 268,168,410   | 203,646,430   | 349,972,738   | 177,742,905   |
| March.....   | 22,891,276  | 47,834,424  | 31,981,213  | 4,943,930   | 138,629,836   | 197,152,249   | 283,728,560   | 280,738,221   | 335,545,359   | 295,632,801   |
| 1st quarter  | 143,676,998 | 171,350,177 | 140,033,729 | 80,142,979  | 459,043,310   | 550,686,574   | 923,428,270   | 755,239,876   | 1,095,078,236 | 721,615,627   |
| April.....   | 38,160,844  | 16,729,183  | 53,618,977  | †11,209,544 | 134,169,807   | 180,332,135   | 275,991,849   | 221,461,579   | 441,843,188   | 188,580,821   |
| May.....     | 23,338,193  | 19,682,172  | 60,883,709  | †2,548,896  | 131,933,291   | 245,614,680   | 269,336,770   | 228,071,893   | 275,041,432   | 314,518,279   |
| June.....    | 18,899,553  | 7,202,945   | 32,159,039  | †457,406    | 110,852,276   | 218,890,518   | 266,970,178   | 223,449,328   | 635,463,660   | 76,771,223    |
| 2d quarter.  | 80,398,590  | 43,614,300  | 146,661,725 | †14,215,846 | 376,955,374   | 644,837,333   | 812,298,797   | 672,982,800   | 1,352,348,280 | 579,870,323   |
| July.....    | 6,942,750   | 218,617     | 21,929,008  | †5,538,344  | 125,729,873   | 261,991,026   | 146,832,062   | 265,590,011   | 224,941,445   | 114,017,507   |
| August.....  | 18,239,808  | 13,088,101  | 50,257,467  | †19,400,396 | 119,221,028   | 310,850,958   | 220,800,830   | 254,011,002   | 338,761,347   | 65,071,203    |
| September... | 70,627,003  | 54,858,569  | 47,155,158  | 16,341,722  | 149,440,796   | 350,885,520   | 219,801,049   | 288,727,350   | 159,765,519   | 241,395,958   |
| 3d quarter.  | 95,809,661  | 68,165,287  | 119,341,633 | †8,597,018  | 394,391,697   | 923,727,504   | 587,433,941   | 808,328,363   | 723,468,311   | 420,484,668   |
| October..... | 77,759,765  | 76,645,518  | 138,912,162 | 56,630,650  | 178,845,371   | 314,155,188   | 320,873,741   | 255,095,644   | 229,774,266   | 417,156,292   |
| November...  | 75,590,738  | 125,149,293 | 97,302,506  | 79,411,271  | 172,173,738   | 339,199,575   | 266,793,144   | 271,228,557   | 316,069,496   | 335,494,931   |
| December...  | 84,232,934  | 96,220,363  | 49,170,057  | 130,976,013 | 187,473,987   | 318,399,592   | 372,233,509   | 354,999,595   | 300,705,676   | 454,739,696   |
| 4th quarter  | 237,583,437 | 298,015,174 | 285,384,725 | 267,017,934 | 538,493,296   | 971,754,355   | 959,900,394   | 881,323,796   | 846,549,438   | 1,227,390,919 |
| Year.....    | 557,468,686 | 581,144,938 | 691,421,812 | 324,348,049 | 1,768,883,677 | 3,091,005,766 | 3,283,061,402 | 3,117,874,835 | 4,017,444,265 | 2,949,361,537 |

\* As reported in "Prentice-Hall Business Information Service."

† Excess of imports.

tures. Moreover, a drop in exports usually comes after a period of depression has started, as was illustrated in 1920 and 1921 when exports did not start to decrease until almost one year after business started to slacken. The volume of imports has the greatest significance as it reflects the domestic demand for raw materials for production as well as the extent of economic recovery in the belligerent nations of Europe. Large exports require large imports, and favorable trade balances, i.e., excess of exports, must be followed by unfavorable balances, i.e., excess of imports, if payment is to be eventually consummated. The payment of Europe's indebtedness to the United States will require that this country import merchandise during the coming years at a greater rate than exports are sent abroad. A favorable balance of \$3,329,000,000 in 1920 must be converted either through increased imports or decreased exports, or both, into an unfavorable balance for a prolonged period.<sup>9</sup>

#### RETAIL SALES

Retail sales represent current purchasing power.—The proportion of the total expenditures of the average American family which is made in the retail stores is approximately 75

<sup>9</sup> The "Federal Reserve Bulletin" each month prepares a representative table of exports and imports of the United States comparing prewar and postwar totals with the price change eliminated. On this basis, the index numbers for 1913, 1919, and 1920 were as follows:

#### EXPORTS

| <i>Year</i> | <i>Raw materials</i> | <i>Producers' goods</i> | <i>Consumers' goods</i> | <i>Grand total exports</i> |
|-------------|----------------------|-------------------------|-------------------------|----------------------------|
| 1913.....   | 100.0                | 100.0                   | 100.0                   | 100.0                      |
| 1919.....   | 88.9                 | 154.7                   | 188.5                   | 118.6                      |
| 1920.....   | 92.2                 | 142.6                   | 137.9                   | 107.7                      |

#### IMPORTS

| <i>Year</i> | <i>Raw materials</i> | <i>Producers' goods</i> | <i>Consumers' goods</i> | <i>Grand total imports</i> |
|-------------|----------------------|-------------------------|-------------------------|----------------------------|
| 1913.....   | 100.0                | 100.0                   | 100.0                   | 100.0                      |
| 1919.....   | 157.5                | 193.0                   | 161.4                   | 171.1                      |
| 1920.....   | 135.2                | 227.3                   | 155.4                   | 171.7                      |

per cent.<sup>10</sup> Retail purchases represent the purchasing power of the people which in turn represents their earning power or productivity. Experience has shown that increased production gives an increased command over the articles of production which is utilized almost immediately. Saving, unfortunately, is a negligible factor when income increases. The volume of retail sales, therefore, affords a criterion for judging the general prosperity of the people.

**The volume of sales.**—The compilation of representative figures which would cover sales in the retail field involves many difficulties. The number of retail stores in the United States runs far into the thousands and the value of sales ranges from a few hundred to many million dollars annually. Until recently, no systematic attempt was made to collect retail sales statistics and accordingly changes in the past have been discussed in a general manner. The sales of the large mail order houses, such as Sears, Roebuck and Company, Montgomery, Ward and Co., and the National Cloak and Suit Company, and the sales of the chain stores, such as F. W. Woolworth Company, and of certain department stores, such as The May Department Stores Company, were accepted as the best indicia of retail conditions.

**The Federal Reserve statement of retail sales.**—The Federal Reserve Board began to compile statistics of retail sales in 1919. The larger department stores in each of the twelve districts were requested to submit monthly statements of the volume of sales either in dollars or on a percentage basis in comparison with the corresponding period during the previous

<sup>10</sup> The average expenditures of an American family are estimated as follows:

|                                 | <i>Per cent</i> |
|---------------------------------|-----------------|
| Food .....                      | 38.2            |
| Clothing .....                  | 16.6            |
| Housing .....                   | 13.4            |
| Fuel and light .....            | 5.3             |
| Furniture and furnishings ..... | 5.1             |
| Miscellaneous .....             | 21.3            |
| <hr/>                           |                 |
| Total .....                     | 100.0           |

—From the *Monthly Labor Review*, vol. XII, No. 2, p. 61.

TABLE No. 47.—CONDITION OF RETAIL TRADE ACCORDING TO  
FEDERAL RESERVE DISTRICTS\*  
(Percentage of increase)

| <i>Dist.<br/>and year.</i> | <i>Jan.</i> | <i>Feb.</i> | <i>Mar.</i> | <i>Apr.</i> | <i>May</i> | <i>June</i> | <i>July</i> | <i>Aug.</i> | <i>Sept.</i> | <i>Oct.</i> | <i>Nov.</i> | <i>Dec.</i> |
|----------------------------|-------------|-------------|-------------|-------------|------------|-------------|-------------|-------------|--------------|-------------|-------------|-------------|
| 1. Boston:                 |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | 1.5         | 6.5         | 1.5         | -1.9        | -4.5       | -3.1        | -12.3       | -4.5        | .....        | .....       | .....       | .....       |
| 1920....                   | 34.8        | 18.3        | 37.5        | 18.5        | 20.7       | 28.0        | 19.9        | 10.9        | 15.4         | .6          | 11.4        | -1.4        |
| 2. New York:               |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | -5.3        | 1.0         | -4.6        | -.5         | -10.0      | -7.1        | -11.5       | -5.2        | .....        | .....       | .....       | .....       |
| 1920....                   | †           | †           | 64.8        | 15.8        | 35.4       | 28.4        | 24.4        | 15.9        | 3.6          | 6.2         | 11.6        | -1.6        |
| 3. Philadelphia:           |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | 3.1         | 3.8         | 1.8         | -.4         | -7.8       | -7.3        | -11.8       | -4.0        | .....        | .....       | .....       | .....       |
| 1920....                   | 22.2        | 17.6        | 37.5        | 12.4        | 50.7       | 34.3        | 23.8        | 22.6        | 15.2         | 15.8        | 8.5         | 6.1         |
| 4. Cleveland:              |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | 3.6         | 6.4         | -.4         | .8          | -5.5       | -14.1       | -21.4       | -21.0       | .....        | .....       | .....       | .....       |
| 1920....                   | †           | 28.6        | 45.5        | 18.4        | 31.3       | 31.5        | 29.9        | 25.7        | 24.6         | 20.8        | 26.1        | 14.7        |
| 5. Richmond:               |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | 5.4         | 8.6         | 2.7         | -.7         | -3.0       | -4.2        | -11.7       | -9.8        | .....        | .....       | .....       | .....       |
| 1920....                   | †           | 14.2        | 23.1        | .9          | 11.0       | 21.4        | 15.7        | 20.9        | 7.5          | 12.4        | 13.1        | 4.9         |
| 6. Atlanta:                |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | -9.0        | 1.4         | -5.6        | -19.5       | -16.8      | -17.0       | -21.2       | -21.3       | .....        | .....       | .....       | .....       |
| 1920....                   | †           | †           | 27.4        | 23.4        | 31.0       | 24.3        | 11.6        | 27.6        | 12.6         | 25.1        | 14.6        | 3.0         |
| 7. Chicago:                |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | -10.5       | -5.4        | -3.2        | -3.1        | -12.5      | -17.3       | -14.7       | -18.8       | .....        | .....       | .....       | .....       |
| 1920....                   | 48.2        | 51.7        | 65.2        | 33.3        | 49.7       | 59.6        | 41.2        | 33.2        | 28.6         | 8.3         | 17.6        | 9.6         |
| 8. St. Louis:              |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | -3.8        | -3.1        | -.7         | -2.9        | -1.6       | -7.9        | -16.5       | -11.7       | .....        | .....       | .....       | .....       |
| 1920....                   | †           | †           | †           | †           | †          | †           | †           | 20.8        | 11.8         | 10.5        | 10.8        | 5.3         |
| 9. Minneapolis:            |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | -12.3       | -7.0        | -11.2       | -5.4        | -14.9      | -16.8       | -21.8       | -11.0       | .....        | .....       | .....       | .....       |
| 1920....                   | †           | †           | †           | 17.0        | 4.3        | 11.8        | 11.6        | 8.8         | .3           | -2.9        | 2.9         | .5          |
| 10. Kansas City:           |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | -11.6       | 4.1         | -6.1        | -2.8        | -5.3       | -10.8       | -10.9       | -8.9        | .....        | .....       | .....       | .....       |
| 1920....                   | †           | †           | 24.6        | 19.6        | 10.9       | 12.9        | 14.1        | 9.9         | 7.8          | -1.9        | 9.2         | -5.1        |
| 11. Dallas:                |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | -8.9        | -4.6        | -16.0       | -17.7       | -17.4      | -17.4       | -22.1       | -23.3       | .....        | .....       | .....       | .....       |
| 1920....                   | †           | †           | †           | †           | †          | †           | 25.9        | 25.6        | 12.4         | 16.0        | 12.7        | -2.9        |
| 12. San Francisco:         |             |             |             |             |            |             |             |             |              |             |             |             |
| 1921....                   | -14.3       | -2.4        | -.6         | -9.3        | -4.1       | -7.8        | -12.9       | -6.2        | .....        | .....       | .....       | .....       |
| 1920....                   | 51.7        | 31.1        | 37.8        | 13.8        | 31.2       | 27.8        | 21.2        | 21.7        | 14.5         | 8.2         | 11.3        | -4.3        |
| United States:†            | †           | †           | †           | -4.2        | -8.6       | -10.7       | -15.1       | -11.9       | .....        | .....       | .....       | .....       |

\* Compiled from the "Federal Reserve Bulletin."

† Information not available in certain districts prior to August, 1920.

‡ Not compiled previous to April, 1921.



year.<sup>11</sup> As is shown in Table No. 47, the first month for which figures were secured for the entire country was August, 1920.

As the Federal Reserve statement is based upon the volume of sales in dollars rather than in units of merchandise, consideration must be given to changes in the level of prices in an analysis of the statement. Retail sales in District No. 2 in December, 1920, were reported as 1.6 per cent less than in December, 1919. Retail prices, however, had declined to a greater extent<sup>12</sup> and the quantity of merchandise sold in the former month really exceeded that in the latter although the money value was less.

**Retail sales as a business barometer.**—The statistics available are too meager to justify a conclusive opinion as to the value of retail sales for barometric purposes. Retail sales in April, 1920, showed a marked falling-off in comparison with the trend of the preceding months and it is significant that it was about this time that business conditions started to become adverse. Yet the recovery in sales during the remainder of the year indicated a condition of affairs which was quite contrary to that which actually transpired. The volume of retail sales during the first four months of 1921 in comparison with that for the same period of 1920 did not reflect the degree of unemployment, of lower wage scales, and reduced purchasing power which prevailed in 1921. It would appear from the evidence available that the trend of retail sales follows well after the trend in business conditions.

<sup>11</sup> The number of stores which reported sales for April, 1921, was as follows:

| <i>District</i>         | <i>Number<br/>of stores</i> |
|-------------------------|-----------------------------|
| 1. Boston .....         | 24                          |
| 2. New York .....       | 42                          |
| 3. Philadelphia .....   | 47                          |
| 4. Cleveland .....      | 15                          |
| 5. Richmond .....       | 25                          |
| 6. Atlanta .....        | 19                          |
| 7. Chicago .....        | 20                          |
| 8. St. Louis .....      | 11                          |
| 9. Minneapolis .....    | 17                          |
| 10. Kansas City .....   | 15                          |
| 11. Dallas .....        | 19                          |
| 12. San Francisco ..... | 29                          |
| Total .....             | 283                         |

<sup>12</sup> The index number of retail food prices in the United States in December, 1920, was 178—a decline of 9.6 per cent from the index number of 197 in December, 1919.—*Monthly Labor Review*, vol. XII, No. 2, p. 21.

## CHAPTER VIII

### BAROMETERS OF LABOR CONDITIONS

**Labor conditions barometrics.**—Closely allied with statistics of production and marketing are those which reflect the conditions of labor. Labor in this sense requires a broad interpretation as it embraces all who work in the service of others for a fixed compensation. The problem of labor—for labor conditions seem destined always to remain the major problem in economics and to be at the heart of all the great controversies of the world—is one of employment and wages. That man must work is inevitable, and such being the case, the conditions under which he makes his living have a close association with the trend of economic development.

Obviously labor conditions can not be satisfactorily measured with statistical standards. The relative degree of contentment with which labor performs its allotted tasks, for instance, would require a psychological rather than a statistical unit of measurement. Wages are never adequately expressed in dollars. The number of unemployed reflects poorly the amount of unemployment. The total number of strikes and lockouts, however, has a deeper significance than a surface analysis might indicate. Imperfect though the units of measurement are, labor conditions afford an opportunity for barometric study which, although not indispensable, has considerable value.

#### EMPLOYMENT

**The problem of employment.**—The number of persons engaged in gainful occupations in the United States in 1910 was 38,167,000 of which number 8,075,772 were female.<sup>1</sup> As the employment difficulties in agriculture concern a shortage rather than a surplus of workers, the number engaged directly in that occupation should be deducted from the aggregate.

<sup>1</sup> "Statistical Abstract of the United States," 1920, p. 283.

The number directly engaged in agriculture in 1910 was 12,659,203 which would leave a remainder of 25,507,797 engaged in industry.<sup>2</sup> Similar figures from the 1920 census have not been issued up to the time of writing, but may be estimated by adding to the number of industrial workers in 1910 a number equivalent to the percentage of gain in the total population during the period from 1910 to 1920.<sup>3</sup> This would indicate that the number of industrial workers in the United States in 1920 was between 29,000,000 and 30,000,000.

Under the assumption that normal conditions of employment would provide full-time employment for all workers, the effect of a decrease in working opportunity upon conditions of employment is readily discernible.<sup>4</sup> A decrease of 5 per cent in production is equivalent to unemployment for 1,500,000 persons; a decrease of 10 per cent means unemployment for 3,000,000; and a decrease of 15 per cent works out the same as entire unemployment for 4,500,000 workers.

In a nation where a change of 1 per cent in the desired productivity means employment or unemployment for nearly 300,000 workers, the problem of employment is decidedly serious.

#### Effect of changing business conditions upon employment.

—Just as stable business conditions bespeak steady employment, so changing conditions result in fluctuating periods of employment. In view of the serious effect upon labor of slight changes in production, as shown in the preceding paragraph, small wonder may be felt that large changes have such drastic results.

Outside of the compilations made at the decennial censuses, no official or scientific attempt is made to compile records of the total number of workers, employed or unemployed, in the United States. Under recent practice, however, the Bureau of Labor Statistics of the Department of Labor is compiling a monthly list of the number of workers at various plants in

<sup>2</sup> "Statistical Abstract of the United States," 1920, p. 798.

<sup>3</sup> The percentage of population gain during the decade from 1910 to 1920 was 14.9. The application of this percentage to the number of industrial workers in 1910—25,507,797—would give an approximate gain of 3,800,661.

<sup>4</sup> It is fully appreciated that "normal" conditions in the United States—as existed in 1912 for instance—do not signify full-time employment for all workers. From an employment standpoint, however, conditions are normal only when all workers are operating on full-time.

TABLE No. 48.—COMPARISON OF EMPLOYMENT IN IDENTICAL ESTABLISHMENTS IN FEBRUARY, 1921, IN COMPARISON WITH JANUARY, 1921, AND FEBRUARY, 1920\*

| Industry                         | February, 1921<br>compared with<br>January, 1921<br>Per cent | February, 1921<br>compared with<br>February, 1920<br>Per cent |
|----------------------------------|--------------------------------------------------------------|---------------------------------------------------------------|
|                                  |                                                              |                                                               |
| Iron and steel .....             | + 0.8                                                        | —24.2                                                         |
| Automobile manufacturing .....   | + 1.3                                                        | —41.3                                                         |
| Car building and repairing ..... | —12.8                                                        | —16.6                                                         |
| Cotton manufacturing .....       | +17.8                                                        | — 0.1                                                         |
| Cotton finishing .....           | +12.9                                                        | —16.0                                                         |
| Hosiery and underwear .....      | +20.8                                                        | —44.2                                                         |
| Woolen .....                     | +42.0                                                        | —35.1                                                         |
| Silk .....                       | + 3.9                                                        | —21.0                                                         |
| Men's ready-made clothing .....  | +21.1                                                        | —26.6                                                         |
| Leather manufacturing .....      | + 0.2                                                        | —36.3                                                         |
| Boots and shoes .....            | + 8.4                                                        | —25.1                                                         |
| Paper making .....               | — 3.1                                                        | —10.0                                                         |
| Cigar manufacturing .....        | — 3.3                                                        | — 7.5                                                         |
| Coal mining (bituminous) .....   | — 2.9                                                        | — 2.0                                                         |

\* *Monthly Labor Review*, vol. XII, No. 4, p. 83.

representative industries which serves to reflect existing conditions. Table No. 48 which has been compiled from the February, 1921, statements illustrates how employment tendencies may be judged. In each industry, the number of workers employed in February, 1921, was less than in February, 1920. In automobile manufacturing, textiles, and leather manufacturing, the decrease was over 33 1-3 per cent. But in ten out of the fourteen industries the number of workers in February, 1921, exceeded that in January, 1921, the preceding month. This would clearly indicate that industrial conditions were recovering from the depression that was so evident in January.<sup>5</sup>

Employment conditions as a business barometer.—The largest difficulty in connection with the use of employment

<sup>5</sup> In December, 1920, the United States Department of Labor began the organization of an industrial employment survey of the United States. Monthly bulletins are issued under the title of "Industrial Employment Survey Bulletin." These bulletins show (1) a graphic curve which gives the monthly trend in the number of workers; (2) a cumulative table which gives the percentage of increase or decrease in employment in 14 industrial groups as set up by the United States Census; (3) a table which gives a geographic analysis; and (4) current comment on the employment situation in 231 industrial centers.—"Industrial Employment Survey Bulletin," No. 3, April, 1921, p. 1.

A reproduction of the cumulative table as of May 31, 1921, is appended (including 1,428 firms employing about 1,600,000):

conditions as a business barometer has been in the procurement of reliable statistics. This difficulty is now being obviated through the monthly compilations of the Department of Labor at Washington, one of which shows the conditions of employment in identical establishments, and the other the increase or decrease in the number of industrial workers in representative industries.

From a barometric standpoint, the major advantage of an accurate knowledge of employment conditions is in judging the relative rapidity with which business recovers from a period of depression. The problem of labor is one of wages more than employment when business is active.

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INDUSTRIES REPORTING A DECREASE IN EMPLOYMENT IN MAY, 1921

| <i>Industry</i>                                | <i>Amount of decrease</i> | <i>Per cent of decrease from April 30, 1921</i> | <i>Relative weight per cent employed to total employed</i> |
|------------------------------------------------|---------------------------|-------------------------------------------------|------------------------------------------------------------|
| Tobacco manufacture .....                      | 1,542                     | 5.5                                             | 1.7                                                        |
| Miscellaneous industries .....                 | 15,355                    | 4.9                                             | 18.2                                                       |
| Lumber .....                                   | 682                       | 2.9                                             | 1.4                                                        |
| Iron and steel .....                           | 8,781                     | 2.5                                             | 21.9                                                       |
| Food and kindred products .....                | 915                       | 0.7                                             | 7.9                                                        |
| Chemicals .....                                | 105                       | 0.1                                             | 4.8                                                        |
| Metals other than iron .....                   | 3                         | 0.004                                           | 4.7                                                        |
| Total decrease in 7 industries as listed ..... | 27,383                    | ...                                             | ...                                                        |

INDUSTRIES REPORTING AN INCREASE IN EMPLOYMENT IN MAY, 1921

| <i>Industry</i>                                     | <i>Amount of increase</i> | <i>Per cent of increase from April 30, 1921</i> | <i>Relative weight per cent employed to total employed</i> |
|-----------------------------------------------------|---------------------------|-------------------------------------------------|------------------------------------------------------------|
| Railroad repair shops .....                         | 4,484                     | 8.4                                             | 3.7                                                        |
| Leather and products .....                          | 1,942                     | 4.3                                             | 3.0                                                        |
| Vehicles for land transportation ...                | 6,610                     | 3.8                                             | 11.5                                                       |
| Textiles .....                                      | 6,606                     | 2.7                                             | 16.1                                                       |
| Stone, clay and glass .....                         | 276                       | 2.0                                             | 0.9                                                        |
| Liquors and beverages .....                         | 31                        | 1.9                                             | 0.1                                                        |
| Paper and printing .....                            | 223                       | 0.4                                             | 3.2                                                        |
| Total increase in 7 industries as listed .....      | 20,172                    | ...                                             | ...                                                        |
| Net decrease in 14 industries as listed .....       | 7,211                     | 0.45                                            | ...                                                        |
| Net decrease in 14 industries since January 1 ..... | 54,596                    | 3.3                                             | ...                                                        |



WAGES

**The trend of wages.**—Wages follow a tendency which differs materially from that exhibited by the other indicia of business conditions. In the first place, the range of fluctuations is not so great. A minimum wage is established by the cost of the essentials of life, which can not be infringed upon except for the shortest of periods if the workers are to survive. No such limitation obtains in the case of prices, for instance, for which there occasionally appears no minimum. In the second place, the usual course of wages is to follow well behind the general trend of activity. This is not always the case, however, as at certain points in the business cycle the wage trend has been known to precede the general trend.

The cycle of wages as a separate economic phenomenon is well known. Wages increase in good times and decrease in poor times. In a period of business activity, labor demands and receives higher wages; and in a period of inactivity is obliged to accept reductions. In the intervening periods—comprising the theoretical normal times—wage scales remain fairly stable. A study of the index number of the average wages per hour of labor in the United States during the

TABLE No. 49.—INDEX NUMBER OF WAGES PER HOUR, 1840-1920\*  
(1913 = 100)

| <i>Year</i> | <i>Index<br/>No.</i> | <i>Year</i> | <i>Index<br/>No.</i> | <i>Year</i> | <i>Index<br/>No.</i> | <i>Year</i> | <i>Index<br/>No.</i> |
|-------------|----------------------|-------------|----------------------|-------------|----------------------|-------------|----------------------|
| 1840.....   | 33                   | 1860.....   | 39                   | 1880.....   | 60                   | 1900.....   | 73                   |
| 1841.....   | 34                   | 1861.....   | 40                   | 1881.....   | 62                   | 1901.....   | 74                   |
| 1842.....   | 33                   | 1862.....   | 41                   | 1882.....   | 63                   | 1902.....   | 77                   |
| 1843.....   | 33                   | 1863.....   | 44                   | 1883.....   | 64                   | 1903.....   | 80                   |
| 1844.....   | 32                   | 1864.....   | 50                   | 1884.....   | 64                   | 1904.....   | 80                   |
| 1845.....   | 33                   | 1865.....   | 58                   | 1885.....   | 64                   | 1905.....   | 82                   |
| 1846.....   | 34                   | 1866.....   | 61                   | 1886.....   | 64                   | 1906.....   | 85                   |
| 1847.....   | 34                   | 1867.....   | 63                   | 1887.....   | 67                   | 1907.....   | 89                   |
| 1848.....   | 35                   | 1868.....   | 65                   | 1888.....   | 67                   | 1908.....   | 89                   |
| 1849.....   | 36                   | 1869.....   | 66                   | 1889.....   | 68                   | 1909.....   | 90                   |
| 1850.....   | 35                   | 1870.....   | 67                   | 1890.....   | 69                   | 1910.....   | 93                   |
| 1851.....   | 34                   | 1871.....   | 68                   | 1891.....   | 69                   | 1911.....   | 95                   |
| 1852.....   | 35                   | 1872.....   | 69                   | 1892.....   | 69                   | 1912.....   | 97                   |
| 1853.....   | 35                   | 1873.....   | 69                   | 1893.....   | 69                   | 1913.....   | 100                  |
| 1854.....   | 37                   | 1874.....   | 67                   | 1894.....   | 67                   | 1914.....   | 102                  |
| 1855.....   | 38                   | 1875.....   | 67                   | 1895.....   | 68                   | 1915.....   | 103                  |
| 1856.....   | 39                   | 1876.....   | 64                   | 1896.....   | 69                   | 1916.....   | 111                  |
| 1857.....   | 40                   | 1877.....   | 61                   | 1897.....   | 69                   | 1917.....   | 128                  |
| 1858.....   | 39                   | 1878.....   | 60                   | 1898.....   | 69                   | 1918.....   | 162                  |
| 1859.....   | 39                   | 1879.....   | 59                   | 1899.....   | 70                   | 1919.....   | 184                  |
|             |                      |             |                      |             |                      | 1920.....   | 234                  |

\* *Monthly Labor Review*, vol. XII, No. 2, p. 74.

period from 1840 to 1920, as shown in Table No. 49, indicates this tendency although changes in the value of the monetary unit of measurement somewhat obscure the wage trend.

**Peculiarities of the trend in wages.**—Few economic phenomena are better known than the fact that the trend in wages tends to lag behind the general trend in conditions at large. Business is well on the road to recovery from a period of depression before an appreciable increase in wages can be noted; and has started the downward trend from a period of activity before wages are adversely affected. The cause arises out of the alternate stages of unwillingness on the part of employers and employees to share equitably the advantages and disadvantages which changing economic conditions bring forth. A period of business activity is accompanied by higher prices and larger profits in which labor usually shares only after the period is well developed. The stage of retrogression which follows a period of activity invariably finds labor strongly resisting the wage reductions which the new conditions necessitate.

**The trend of wages and prices.**—A comparison of the relative changes in wages and prices during the period from 1890 to 1920, as shown in Table No. 50, leads to the opinion that certain modifications must be made to the general statement that the trend in wages follows the trend in prices. In a period of recovery, wages apparently start to advance before prices. This is due not to a betterment in conditions but because of a realization that wage reductions have been too drastic and that an upward readjustment is imperative. This advance is of undoubted assistance as a contributing factor to the recovery in industrial activity which is never far distant at this point.

Although wages advance, as has been just stated, before the period of depression ends and thus precede the rise in prices which becomes in evidence only after recovery has begun, the advantage is not long sustained. Once the upward movement of prices begins, the advance is much more rapid than in the case of wages. During the dull years following the crisis of 1893 wages advanced from an index number of 67 in 1894 to 69 in 1898, yet prices in both years showed the same index number, 69. In the succeeding period, from 1899 to 1907, however, prices advanced to 94 and

TABLE No. 50.—COMPARISON OF INDEX NUMBERS OF WHOLESALE PRICES AND WAGES PER HOUR, 1890-1920\*  
(1913 = 100)

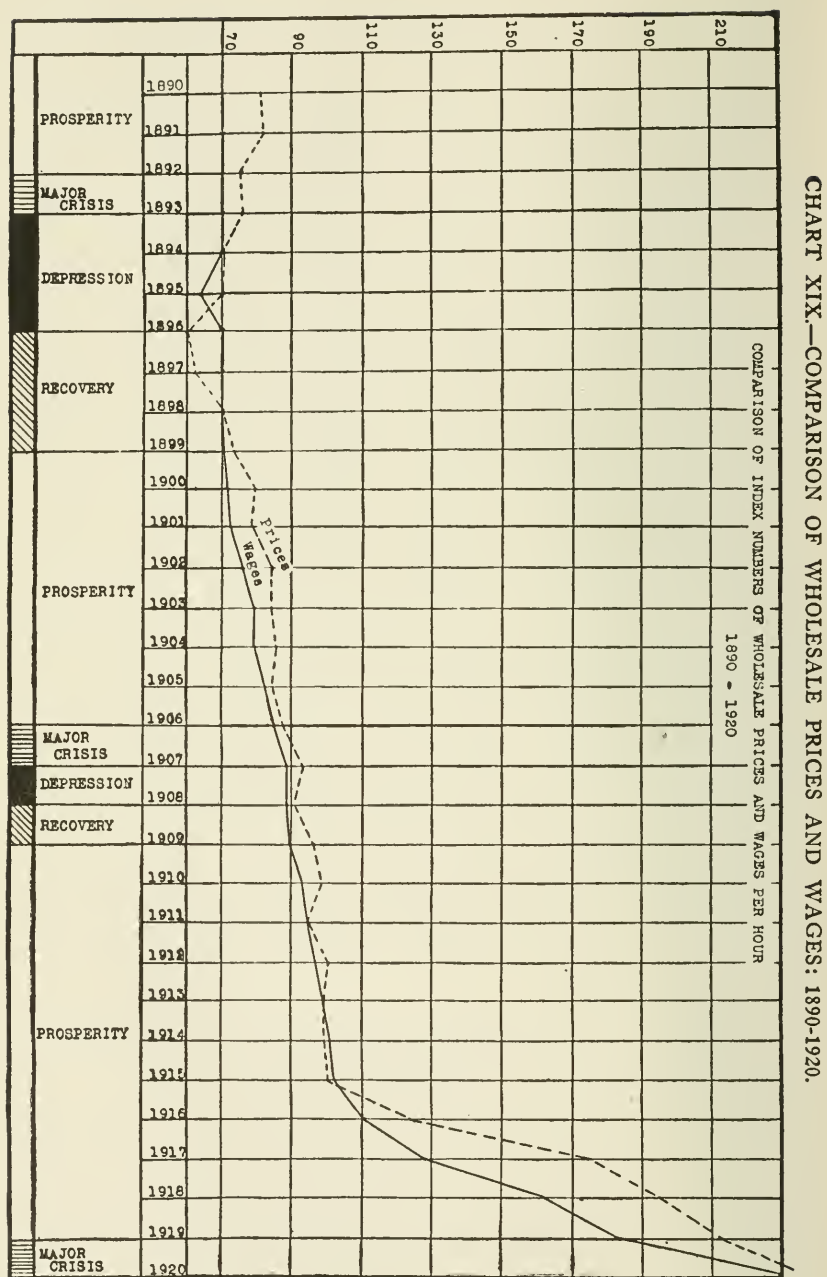
| Year      | Wholesale |        | Year      | Wholesale |        |
|-----------|-----------|--------|-----------|-----------|--------|
|           | Wages     | prices |           | Wages     | prices |
| 1890..... | 69        | 81     | 1905..... | 82        | 85     |
| 1891..... | 69        | 82     | 1906..... | 85        | 88     |
| 1892..... | 69        | 76     | 1907..... | 89        | 94     |
| 1893..... | 69        | 77     | 1908..... | 89        | 91     |
| 1894..... | 67        | 69     | 1909..... | 90        | 97     |
| 1895..... | 68        | 70     | 1910..... | 93        | 99     |
| 1896..... | 69        | 66     | 1911..... | 95        | 95     |
| 1897..... | 69        | 67     | 1912..... | 97        | 101    |
| 1898..... | 69        | 69     | 1913..... | 100       | 100    |
| 1899..... | 70        | 74     | 1914..... | 102       | 100    |
| 1900..... | 73        | 80     | 1915..... | 103       | 101    |
| 1901..... | 74        | 79     | 1916..... | 111       | 124    |
| 1902..... | 77        | 85     | 1917..... | 128       | 176    |
| 1903..... | 80        | 85     | 1918..... | 162       | 196    |
| 1904..... | 80        | 86     | 1919..... | 184       | 212    |
|           |           |        | 1920..... | 234       | 243    |

\* Compiled from *Monthly Labor Review*, vol. XII, No. 2, pp. 45 and 74.

wages to but 89. In 1908, the year following the crisis of 1907, prices fell to 91 but wages remained at 89. By 1911, however, prices had advanced to 99 while wages had increased to only 93. The period from 1913 to 1915 which marked the opening of the World War showed that wages advanced from 100 to 103 while prices had increased from 100 to but 101. By 1917, however, prices had increased to 176 while wages had advanced to only 128. By 1920 wages were rapidly overtaking prices as the respective index numbers of 234 and 243 indicate. In January, 1921, prices had fallen to 177, but wages were over 200, thus substantiating the accepted belief that in the downward swing of the cycle wages invariably lag behind.

**Wages as a barometer of business.**—Under ordinary conditions the trend of wages follows the trend of general conditions and thus limits its use as a business barometer. In a period of activity, wages increase only after labor is brought to the realization that greater compensation can be obtained by reason of new economic conditions. In a period of retrogression, wages lag behind the general downward trend because of the resistance the workers offer to the loss of advantages gained during the period of activity.

The trend of wages has its largest significance in a period



of depression following a prolonged stage of comparative inactivity. Wages reach abnormally low levels and upward readjustments are necessary, quite apart from an actual improvement in business conditions. Any tendency on the part of wages to increase at such a time is an indication that the period of recovery is fairly close at hand.

#### INDUSTRIAL CONTROVERSIES

**Periodicity of controversies.**—Periods of extreme industrial activity are invariably marked by a large number of controversies which develop between employers and employees. The most common cause of the controversies is a demand for increased wages, although shorter hours, and recognition of the labor unions are frequently the point of contention. Industrial disputes rarely terminate in strikes or lockouts during periods of depression because the workers are not in a favorable position to safeguard their interests. Even after business has recovered, controversies are uncommon due to the wage increases which enlarged profits permit the employers to pay the workers.

As industrial activity increases, the cost of living goes up, and the workers find it necessary to seek even higher wages. In the meantime the encroachment of production costs upon selling prices is reducing the margin of profit to the employers and causing them to resist the demand for increased wages. An impasse is eventually reached and a strike or lockout results. An increase in the number of controversies is an indication that the end of the period of extreme activity is in sight. As prosperity wanes and the business cycle swings downward, the number of controversies increases rather than decreases because of the desire of the workers, not to continue to seek higher wages, but to hold the betterment which they gained in the upward swing.

**Strike compilations.**—Because of the difficulty involved in securing adequate information, no complete or official list of strikes are compiled in the United States. The Department of Labor endeavors to maintain as accurate a record as possible but thus far has met with limited success.<sup>6</sup>

<sup>6</sup> "For various reasons, in spite of the persistent efforts of the Bureau, complete information of every strike cannot be obtained, nor is it possible to say that the information is correct in every particular, especially since statements of employers and employees are frequently greatly at variance."—*Monthly Labor Review*, vol. XI, No. 3, p. 190.



The number of strikes and lockouts for which information was received by the Department of Labor during the calendar years 1914-1919 were as follows: 1914, 1,204; 1915, 1,420; 1916, 3,789; 1917, 4,450; 1918, 3,337; 1919, 3,374. These figures do not afford a fair criterion, however, due to the unusual industrial conditions which prevailed during the war years, notably the "cost-plus" contracts of the Government.<sup>7</sup>

**Industrial controversies as a business barometer.**—Industrial controversies which develop into strikes and lockouts are highly significant. A scarcity of disputes indicates that industry is either in a period of depression or of gradual recovery from an era of inactivity. An increase in the number usually signifies that business has entered the final stage of the upward movement of the cycle. Narrower margins of profits, due to inability to continue increasing selling prices to offset enlarged production costs, cause the employers to resist further demands from the workers, and strikes ensue. And the increase in the number of disputes foreshadows the end of the so-called period of prosperity. The practical absence of controversies during periods of depression and recovery, however, prevents the use of this factor as a criterion of when depression ends and recovery begins.

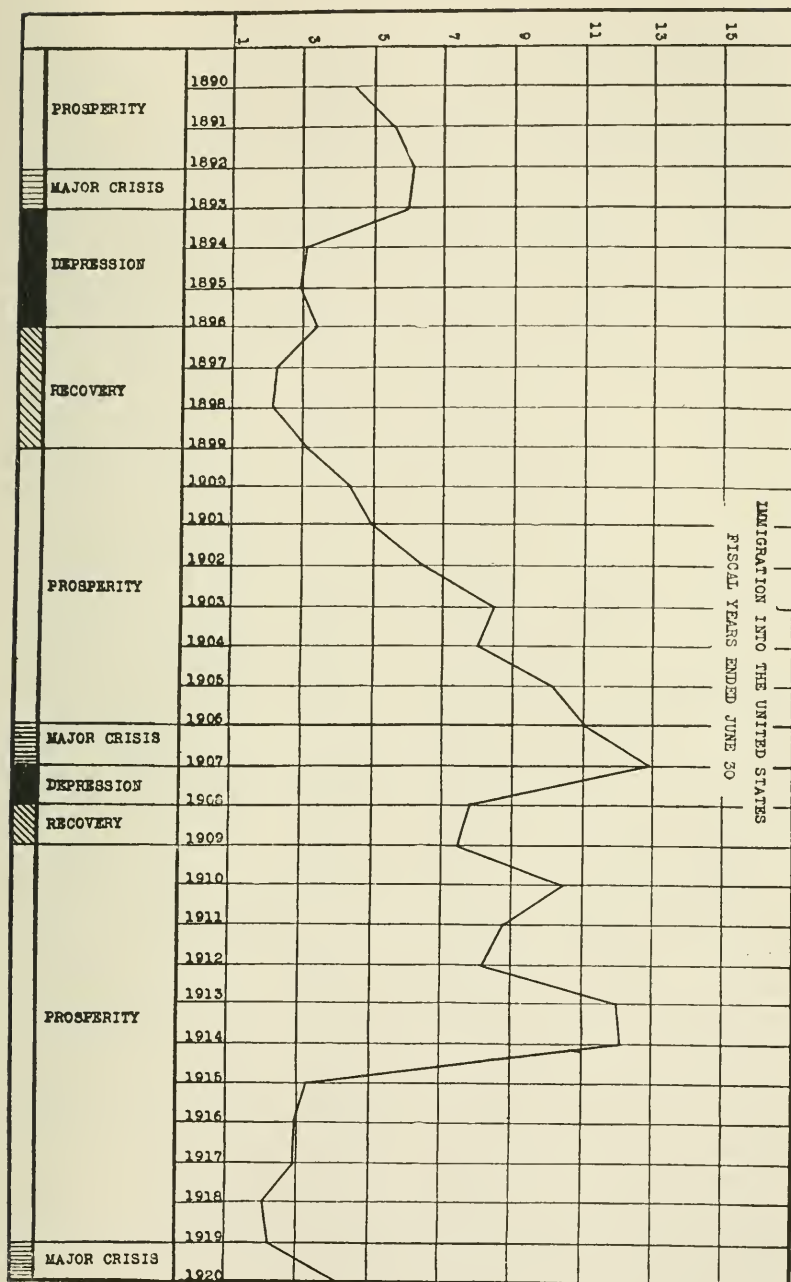
#### MIGRATION

**The two forms of migration.**—The term migration covers the international movements of peoples. In the United States, immigration—the inward flow of aliens—completely overshadows the significance of emigration—the outward flow. This must naturally be so in any country similar to this nation which is still in the development stage. Immigration brings a multitude of problems, social and otherwise, but the purpose of the present volume limits the discussion to the economic aspect.

From an industrial standpoint, the chief interest in immigration lies in the fact that herein is the great source of

<sup>7</sup> The first six months of 1920 witnessed a world-wide prevalence of strikes that has no precedence in industrial history. A compilation which appeared in the *Journal of Commerce* (N. Y.) on December 2, 1920, estimated the number of world strikers during the period at 8,977,798. The German estimate was 1,866,358; Italy, 1,781,250; France, 1,186,670; Great Britain, 1,117,040; the United States, 958,700; Spain, 724,700; Australia, 303,400; and Argentina, 61,100.

CHART XX.—IMMIGRATION INTO THE UNITED STATES: 1890-1920.



unskilled labor which is continually in demand in this country. If immigrant labor always remained unskilled, less apprehension might be felt by domestic labor which is chiefly skilled. But with the development of machinery and the natural aptitude of many aliens to grasp mechanical processes, the unskilled immigrant of to-day becomes to-morrow a worthy competitor of the skilled American craftsman.

**Effect of immigration upon industrial conditions.**—Prior to the World War, the number of immigrant arrivals in the United States annually averaged close to 1,000,000. In 1907, the arrivals totaled 1,285,349 and in 1914 the number was 1,218,480. Not all of these immigrants were able-bodied male workers, but the majority were, and their absorption was not without effect upon the industrial situation. Rapid as the economic development of the country has been, it has not at all times been able to keep pace with the increase in the number of workers and it is significant to note that a slump in business conditions has been usually preceded by a substantial increase in immigration.

It is not fair to assume, as is done in some quarters, that the increase in immigration caused the reaction in business. Quite possibly, it was one of the minor contributing factors which hastened the reaction, but, as has been shown, the chief causes lie in other developments. From Table No. 51 the opinion may readily be formed that alternate periods of prosperity and depression are a cause of changes in immigration rather than an effect.

**Immigration as a business barometer.**—The efficacy of immigration statistics as a business barometer is open to considerable question. Whether an immigrant moves from one land to another does not depend entirely upon economic and social conditions in the new land. The dominant factor is the relationship between conditions in the new land and the old. Adverse conditions in one land may be favorable in comparison with existing conditions in another. So a mere increase in the number of arrivals does not necessarily signify prosperity present, past, or future in a country.

Moreover it has not been established that a substantial increase in the number of immigrants has caused the industrial depressions of the past. The depression of 1920 followed five years during which immigration had practically ceased. The increase in the number of immigrants prior to

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TABLE No. 51.—IMMIGRATION INTO THE UNITED STATES, 1851-1920\*  
(fiscal years ended June 30)

| <i>Year</i> | <i>Arrivals</i> | <i>Year</i> | <i>Arrivals</i> |
|-------------|-----------------|-------------|-----------------|
| 1851.....   | 379,466         | 1886.....   | 334,203         |
| 1852.....   | 371,603         | 1887.....   | 490,109         |
| 1853.....   | 368,645         | 1888.....   | 546,889         |
| 1854.....   | 427,833         | 1889.....   | 444,427         |
| 1855.....   | 200,877         | 1890.....   | 455,302         |
| 1856.....   | 195,857         | 1891.....   | 560,319         |
| 1857.....   | 112,123         | 1892.....   | 623,084         |
| 1858.....   | 191,942         | 1893.....   | 502,917         |
| 1859.....   | 129,571         | 1894.....   | 314,467         |
| 1860.....   | 133,143         | 1895.....   | 279,948         |
| 1861.....   | 142,877         | 1896.....   | 343,267         |
| 1862.....   | 72,183          | 1897.....   | 230,832         |
| 1863.....   | 132,925         | 1898.....   | 229,299         |
| 1864.....   | 191,114         | 1899.....   | 311,715         |
| 1865.....   | 180,339         | 1900.....   | 448,572         |
| 1866.....   | 332,557         | 1901.....   | 487,918         |
| 1867.....   | 303,104         | 1902.....   | 648,743         |
| 1868.....   | 138,840         | 1903.....   | 857,046         |
| 1869.....   | 352,768         | 1904.....   | 812,870         |
| 1870.....   | 387,203         | 1905.....   | 1,026,499       |
| 1871.....   | 321,350         | 1906.....   | 1,100,735       |
| 1872.....   | 404,806         | 1907.....   | 1,285,349       |
| 1873.....   | 459,803         | 1908.....   | 782,870         |
| 1874.....   | 313,339         | 1909.....   | 751,786         |
| 1875.....   | 227,498         | 1910.....   | 1,041,570       |
| 1876.....   | 169,986         | 1911.....   | 878,587         |
| 1877.....   | 141,857         | 1912.....   | 838,172         |
| 1878.....   | 138,469         | 1913.....   | 1,197,892       |
| 1879.....   | 177,826         | 1914.....   | 1,218,480       |
| 1880.....   | 457,257         | 1915.....   | 326,700         |
| 1881.....   | 669,431         | 1916.....   | 298,826         |
| 1882.....   | 788,992         | 1917.....   | 295,403         |
| 1883.....   | 603,322         | 1918.....   | 110,618         |
| 1884.....   | 518,592         | 1919.....   | 141,132         |
| 1885.....   | 395,346         | 1920.....   | 430,001         |
|             |                 | 1921.....   | 805,228         |

\* From "Annual Report of the Commissioner General of Immigration," 1920, op. p. 277.

other years of depression was more likely an effect of changing conditions than a cause, a belief which is substantiated by the decrease in arrivals during the years immediately following.

But apart from the records of the past, the use of immigration statistics as a business barometer in the future is to

be subject to decided limitations. The days of free and unrestricted immigration are apparently over. Legislation has already been enacted under the terms of which the maximum arrivals permitted in the fiscal year ended June 30, 1922, is limited to less than the total immigration during the first half of the preceding fiscal year. A strong probability exists that this law will be followed by another which will in a similar manner restrict alien arrivals and thus reduce the efficiency of this factor as a business barometer.<sup>8</sup>

<sup>8</sup> Under the Immigration Act which became a law in the United States on May 19, 1921, the number of immigrants from each foreign country who will be admitted to this country during the fiscal year which will end on June 30, 1922, is limited to 3 per cent of the nationals of each country who were here in 1910. Under this restriction the maximum number of persons who will be permitted to land from the various countries in Europe and Turkey in Asia is estimated at 355,461. *The Commercial and Financial Chronicle* (N. Y.), vol. 112, No. 2905, p. 801.



## CHAPTER IX

### BAROMETERS OF BUSINESS PROFITS

**Barometers of prosperity.**—Since the acquirement of monetary profit is the chief actuating force in business, the measurement of relative earnings should provide a serviceable method of determining the trend of general conditions. The degree of prosperity which exists at any particular time is reflected in various ways. The published earnings of the large corporations are indicative of conditions throughout the mercantile world, and especially in the United States where the corporate form of business organization is most popular.<sup>1</sup> Changes in the number of business firms which become insolvent or bankrupt constitutes another criterion. The volume and nature of new security offerings reflects general financial conditions both from the standpoint of the corporations and of the investing public.

#### CORPORATE EARNINGS

**The information available.**—The information which is available concerning corporate profits is far from satisfactory. Promptness is essential if current business information is to be utilized for barometric purposes. Reports of individual corporate earnings are usually rendered long after the period covered has terminated, and by that time the figures have lost their utility as barometers. Accounting difficulties militate against prompter and more frequent earnings statements, and cause the average company to compile a statement of profit, at least for public information, but once a year. It ordinarily takes from one to three months to prepare this annual statement, which means that profits earned during the late winter and spring and summer of one year are not made public until February or March of the following year. Annual corporate earnings statements therefore do not reflect accurately business profits as they are when

<sup>1</sup> In the fiscal year which ended on June 30, 1920, a total of 319,628 corporations paid taxes to the United States Government. "Annual Report of the Commissioner of Internal Revenue," 1920, p. 105.

the statements are issued, but as they were during the preceding year. Moreover, annual income reports are particularly unsatisfactory for barometric purposes because profits are generally reported for the entire year and no method is afforded of determining the trend in profits during the year. The year 1920 was notable in this respect. The first six months were unusually active and the last six decidedly dull in most industries. As a result the earnings statements presented a hodge-podge of little barometric significance.

Fortunately this shortcoming does not hold good for all corporations. The railroads and the public utility companies in general are required to file monthly statements of gross and net revenue with the various Federal and State commissions. Certain of the industrial companies issue quarterly statements of earnings which are especially valuable as barometers.

**Railroad earnings.**—The monthly reports of the gross and net earnings of the American railroads afford a double criterion for judging business conditions. The gross earnings serve as an indication of the business activity of the nation although frequent changes in rates prevent the ready comparison of corresponding periods. As is discussed previously, however, records of car loadings and idle cars are better indicia for this purpose. The net earnings, i.e., the gross earnings less the operating expenses but before the payment of interest charges, show the prosperity of the railroad industry, and it is with net earnings that the present discussion is concerned.

With the single exception of agriculture, railroading engages the services of the largest number of workers in the United States.<sup>2</sup> Moreover, the railroad companies are the largest single class of purchasers of American products. The statement has been made that the country is never any more prosperous than the railroads. That a large element of truth is contained in this statement is shown by the dependence, direct and indirect, placed upon railroad prosperity throughout the country. If the roads are not prospering, the wages of the employees must be adversely affected and a considerable degree of purchasing power is curtailed. If earnings are low, orders for new construction and equipment will be reduced with detri-

<sup>2</sup> The number of employees on the Class I railroads of the United States in 1918 was 1,837,663. The total on all roads was approximately 1,929,000. "Statistics of Railways in the United States," 1918, p. 20.

ment to a sequence of industries which supply the required materials. And last but not least in importance, if the roads are not making money, the adequacy of transportation facilities is imperilled—a condition truly serious in a nation where transportation is a vital factor.

The net earnings of the principal United States railroads during the period from 1910 to 1920 are shown in Table No. 52. The large decrease during the years 1919 and 1920 was due not to a falling-off in gross revenue but to substantial in-

TABLE No. 52.—NET EARNINGS OF PRINCIPAL UNITED STATES RAILROADS, 1910-1920\*

| <i>Year</i> | <i>Net earnings</i> | <i>Year</i> | <i>Net earnings</i> |
|-------------|---------------------|-------------|---------------------|
| 1910.....   | \$909,470,000       | 1916.....   | \$1,272,639,000     |
| 1911.....   | 883,626,000         | 1917.....   | 1,215,110,000       |
| 1912.....   | 937,968,000         | 1918.....   | 905,794,000         |
| 1913.....   | 907,022,000         | 1919.....   | 764,578,000         |
| 1914.....   | 828,522,000         | 1920.....   | 461,922,000         |
| 1915.....   | 1,040,304,000       |             |                     |

\* From *The Financial and Commercial Chronicle*, vol. 112, No. 2908, p. 1080.

creases in operating expenses. The facility with which the railroads will prove able to regain their former earning capacity during the years ahead will be a factor of large importance in determining the duration of the stage of industrial depression which exists as this chapter is being written.<sup>3</sup>

**Public utility earnings.**—The public utility companies which include the electric light, heat, and power companies, the water and gas plants, the telephone and telegraph services, and the traction companies, have, as a class, the most stable gross revenues. The demand for the product of the utility companies is largely independent of business conditions and thus differs materially from the demand for steam railroad service or the products of industrial concerns. Accordingly little barometric value may be found in the reports of gross earnings of these companies.

**Industrial earnings.**—Although the majority of the industrial companies issue a statement of earnings but once a year, a few of the larger companies issue quarterly reports.<sup>4</sup> A

<sup>3</sup> June, 1921.

<sup>4</sup> In addition to the United States Steel Corporation, the following important industrial companies issue quarterly reports: American Hide and Leather Co., Central Leather Co., Utah Copper Co., Colorado Fuel and Iron Co., Corn Products Refining Co., International Nickel Co., Lackawanna Steel Co., Midvale Steel Co., and Republic Iron and Steel Co.

summary of the net earnings of the United States Steel Corporation for the period from 1906 to 1920 is shown in Table No. 53. A study of this statement shows that it reflects quite accurately existing conditions with a certain tendency to follow the trend rather than precede. The depression which followed the panic of 1907 is reflected in the substantially reduced earnings throughout 1908. But the earnings during the last quarter of 1914—only \$10,933,000 the lowest point in the entire tabulation—did not foretell that the same period the following year would prove the most profitable up to that time. And the large earnings during the third and fourth quarter of 1920 did not reflect the reaction which had already set in.

TABLE No. 53.—NET EARNINGS OF UNITED STATES STEEL CORPORATION, 1906-1920\*  
(000 omitted)

| <i>Year</i> | <i>First<br/>quarter</i> | <i>Second<br/>quarter</i> | <i>Third<br/>quarter</i> | <i>Fourth<br/>quarter</i> |
|-------------|--------------------------|---------------------------|--------------------------|---------------------------|
| 1920.....   | \$42,089                 | \$43,155                  | \$48,051                 | \$43,877                  |
| 1919.....   | 33,513                   | 34,331                    | 40,177                   | 35,791                    |
| 1918†.....  | 88,546                   | 153,273                   | 144,948                  | 86,354                    |
| 1917†.....  | 113,121                  | 144,498                   | 131,976                  | 102,674                   |
| 1916.....   | 60,713                   | 81,126                    | 85,817                   | 105,968                   |
| 1915.....   | 12,457                   | 27,950                    | 38,710                   | 51,232                    |
| 1914.....   | 17,994                   | 20,457                    | 22,276                   | 10,933                    |
| 1913.....   | 34,426                   | 41,219                    | 38,450                   | 23,036                    |
| 1912.....   | 17,826                   | 25,102                    | 30,063                   | 35,185                    |
| 1911.....   | 23,519                   | 28,103                    | 20,522                   | 23,105                    |
| 1910.....   | 37,616                   | 40,170                    | 37,365                   | 25,901                    |
| 1909.....   | 22,291                   | 29,340                    | 32,246                   | 40,982                    |
| 1908.....   | 18,229                   | 20,265                    | 27,106                   | 26,246                    |
| 1907.....   | 39,122                   | 45,503                    | 43,804                   | 32,534                    |
| 1906.....   | 36,634                   | 40,125                    | 38,114                   | 41,750                    |

\* From *New York Evening Post*, April 30, 1921, p. 4F.

† Earnings for 1917 and 1918 are before deduction of war-profits tax.

Dividend payments.—As dividends are paid out of earnings, either current or accumulated, a direct relationship exists between the two.<sup>5</sup> Statistics of dividend payments must be broadly interpreted for barometric purposes. Some concerns endeavor to pay a certain amount regularly regardless of ex-

<sup>5</sup> Dividends are usually paid only from current earnings. The practice of drawing upon surplus earnings from previous periods to pay dividends when current profits are insufficient is sometimes justified but vitiates the record of dividend payments as a barometer.

isting conditions, while others believe it fairer to pay dividends more in accordance with the fluctuations in earnings. Obviously the dividend record of a company following the first policy would be a poor criterion of current prosperity, while that of a company following the second method should be a good standard.

TABLE No. 54.—DIVIDEND RECORD OF THE PENNSYLVANIA RAILROAD COMPANY, 1856-1921\*

| <i>Year</i> | <i>Dividend<br/>rate<br/>per cent</i> | <i>Year</i> | <i>Dividend<br/>rate<br/>per cent</i> | <i>Year</i> | <i>Dividend<br/>rate<br/>per cent</i> |
|-------------|---------------------------------------|-------------|---------------------------------------|-------------|---------------------------------------|
| 1856.....   | 8                                     | 1881.....   | 8                                     | 1906.....   | 6½                                    |
| 1857.....   | 4                                     | 1882.....   | 6½                                    | 1907.....   | 7                                     |
| 1858.....   | 6                                     | 1883.....   | 4½                                    | 1908.....   | 6                                     |
| 1859.....   | 6                                     | 1884.....   | 5                                     | 1909.....   | 6                                     |
| 1860.....   | 6                                     | 1885.....   | 5                                     | 1910.....   | 6                                     |
| 1861.....   | 6                                     | 1886.....   | 5                                     | 1911.....   | 6                                     |
| 1862.....   | 8                                     | 1887.....   | 5                                     | 1912.....   | 6                                     |
| 1863.....   | 9                                     | 1888.....   | 5                                     | 1913.....   | 6                                     |
| 1864.....   | 10                                    | 1889.....   | 5½                                    | 1914.....   | 6                                     |
| 1865.....   | 10                                    | 1890.....   | 5                                     | 1915.....   | 6                                     |
| 1866.....   | 9                                     | 1891.....   | 3                                     | 1916.....   | 6                                     |
| 1867.....   | 6                                     | 1892.....   | 6½                                    | 1917.....   | 6                                     |
| 1868.....   | 8                                     | 1893.....   | 5                                     | 1918.....   | 6                                     |
| 1869.....   | 10                                    | 1894.....   | 5                                     | 1919.....   | 6                                     |
| 1870.....   | 10                                    | 1895.....   | 5                                     | 1920.....   | 6                                     |
| 1871.....   | 10                                    | 1896.....   | 5                                     | 1921.....   | 4                                     |
| 1872.....   | 10                                    | 1897.....   | 5                                     | .....       | .....                                 |
| 1873.....   | 5                                     | 1898.....   | 5                                     | .....       | .....                                 |
| 1874.....   | 10                                    | 1899.....   | 5                                     | .....       | .....                                 |
| 1875.....   | 8                                     | 1900.....   | 6                                     | .....       | .....                                 |
| 1876.....   | 8                                     | 1901.....   | 6                                     | .....       | .....                                 |
| 1877.....   | 3                                     | 1902.....   | 6                                     | .....       | .....                                 |
| 1878.....   | 2½                                    | 1903.....   | 6                                     | .....       | .....                                 |
| 1879.....   | 4                                     | 1904.....   | 6                                     | .....       | .....                                 |
| 1880.....   | 3½                                    | 1905.....   | 6                                     | .....       | .....                                 |

\* From "Standard Corporation Records," Standard Statistics Co., card P-1.

The dividend record of the Pennsylvania Railroad Company, as shown in Table No. 54, is of interest in this connection for several reasons. This company has paid dividends continuously since 1856, a record which is not surpassed by any other American enterprise of importance. The policy of the company, at least since 1884 has been to maintain a fixed dividend rate. Hence the dividend record from that time until 1921



TABLE No. 55.—DIVIDEND RECORD OF THE UNITED STATES STEEL CORPORATION, 1902-1920\*

| <i>Year</i> | <i>Dividend<br/>rate<br/>per cent</i> | <i>Year</i> | <i>Dividend<br/>rate<br/>per cent</i> |
|-------------|---------------------------------------|-------------|---------------------------------------|
| 1902.....   | 4                                     | 1912.....   | 5                                     |
| 1903.....   | 3½                                    | 1913.....   | 5                                     |
| 1904.....   | 0                                     | 1914... ..  | 4½                                    |
| 1905.....   | 0                                     | 1915.....   | 0                                     |
| 1906.....   | 3                                     | 1916.....   | 7                                     |
| 1907.....   | 2                                     | 1917.....   | 12                                    |
| 1908.....   | 2                                     | 1918.....   | 16                                    |
| 1909.....   | 2¾                                    | 1919.....   | 6                                     |
| 1910.....   | 5                                     | 1920.....   | 5                                     |
| 1911.....   | 5                                     |             |                                       |

\* Compiled from "Poor's Manual of Industrials," 1920, p. 1894.

does not reflect the economic difficulties of the intervening period. The action of the company in reducing the rate to 4 per cent in 1921 is therefore particularly significant. It would indicate that in the opinion of the management of the road, conditions were more adverse in 1921 than at any time since 1891.

The dividend record of the United States Steel Corporation during the years 1902 to 1920, as shown in Table No. 55, is in interesting contrast to that of the Pennsylvania Railway. The steel company has followed the policy of distributing dividends in accordance with earnings. As a result the change in the rate of dividends parallels closely the trend in general business conditions.

**Corporate earnings as a business barometer.**—The net earnings—as distinguished from the gross revenues—of the leading American corporations afford information of somewhat limited barometric value. Ordinarily the income statements are published too late to reflect current conditions, but this is not entirely the case. Of the three classes of industry, railroads, utilities, and the true industrials, the income reports of the first are of most importance because they are issued more promptly and more frequently and because of the number of persons directly engaged in railroading and of the dependence of many allied industries upon railroad prosperity. Income statements of public utility companies are of practically no forecasting value because of the relative stability of earnings in this field. The income statements of the industrial

companies which are issued quarterly indicate existing conditions with fair accuracy but the trend follows rather than anticipates changing conditions. Railroad net earnings are of large significance, surpassed only by the crops and credit conditions in determining future economic developments.

Dividend payments are of significance only (1) in the case of companies as the United States Steel Corporation which follows a practice of paying dividends in proportion to current earnings, and (2) whenever the dividend policy of established companies is changed. In the first case, the rate of dividend reflects the extent of current corporate prosperity. In the second case, a general tendency on the part of corporations to declare extra dividends indicates a marked degree of prosperity whereas a tendency to reduce and suspend dividend payments reflects impaired profits.<sup>6</sup>

#### BUSINESS FAILURES

**Causes of business failures.**—In the true sense, no record is kept of the number of business failures. The records which are available indicate simply the number of firms which become insolvent or bankrupt. The great majority of those who fail in business simply withdraw and cover their losses from outside sources. The reason why business firms fail has been the subject of considerable research. One of the large mercantile reporting agencies<sup>7</sup> reports annually the percentage due to various causes and finds the two principal causes to be incompetence and lack of capital. A more comprehensive cause is lack of foresight.

Inability to foresee economic developments will always remain the chief cause of business failure. In the compilation just referred to, the statement shows that of the total failures in 1907 incompetence caused 22.6 per cent, and lack of capital, 37.1 per cent, and specific conditions, 16.3 per cent. In the following year, 1908, incompetence caused 21.6 per cent, lack of capital, 34.2 per cent, and specific conditions, 18.9 per cent, —practically no change from 1907. But the total failures in 1908 amounted to 15,690, an increase of 34 per cent over the 1907 total of 11,725. It is not reasonable to believe that

<sup>6</sup> Payments of dividends in scrip, i.e., promissory notes, is always a danger sign, in individual cases, of the company, and in numerous cases, of weakness in the entire financial situation.

<sup>7</sup> "Bradstreet's."

precisely the same causes in two successive years could result so differently. The reason for the increase in the number of failures in 1908 was because the economic developments of the early part of the year were not properly foreseen.

**The trend of commercial failures.**—The number of business failures parallels closely the trend of business conditions. In a period of activity, which includes the stages of recovery and prosperity in the business cycle, business failures decrease in number, while in a period of inactivity, which comprises the stages of relapse and depression, the number increases. The reason is fairly obvious. Business prosperity depends upon the relationship of prices, for the competent as for the incompetent, for the firm with plenty of capital as for the firm handicapped by a lack of capital. In a period of activity, prices advance, and profits are easily secured. No sagacity is needed; simply the act of buying with ordinary caution, selling a short time thereafter, and thereby taking advantage of the increase in price which came in the interval. Under such conditions, the number of failures naturally decreases. In a period of inactivity, prices fall, and profits are accordingly difficult to obtain. The number of failures increases as a consequence.

**Relationship between number of failures and amount of liabilities.**—From a theoretical viewpoint, the number of business failures should be less important than the amount of the liabilities. One large failure has a greater effect than many minor insolvencies. Reference to Table No. 56, however, shows that for the aggregate, the amount of liabilities varies in proportion closely with the number of failures. It should be appreciated, none the less, that when the business cycle swings from prosperity into relapse, the amount of liabilities increases in greater proportion than the number of failures.

**Relationship between number of failures and number of firms in business.**—Again, from a theoretical viewpoint, the actual number of failures should be less significant than the percentage of firms failing. In a country such as the United States, which has yet to attain its maximum growth, the number of firms in business is constantly increasing, and this should tend to make invalid the comparison of different years on the basis of number of failures alone. However, as is shown in Table No. 56, the percentage of firms failing even when conditions are most adverse is extremely small, rarely exceeding

TABLE No. 56.—COMMERCIAL FAILURES IN THE UNITED STATES,  
1891-1920\*

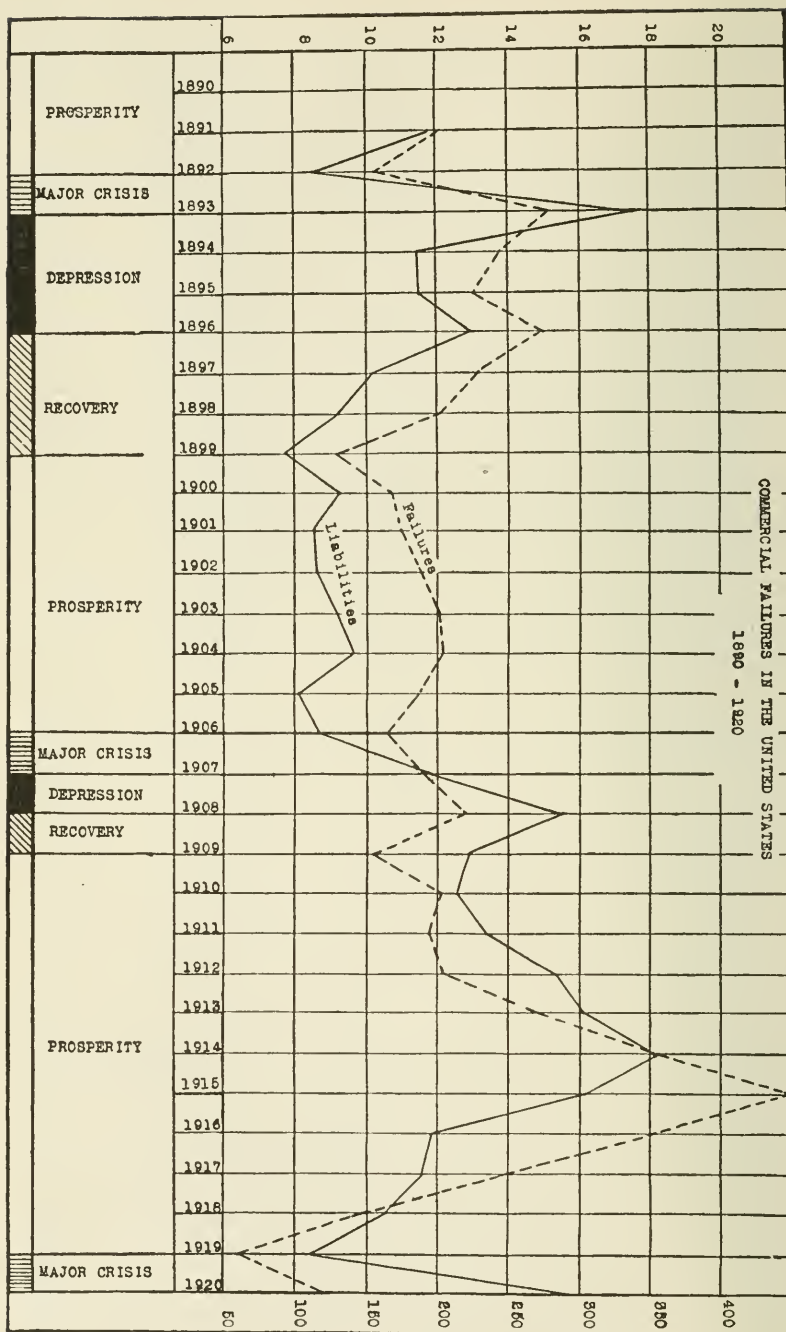
| <i>Year</i> | <i>Number of failures</i> | <i>Amount of liabilities</i> | <i>Percentage of concerns failing</i> |
|-------------|---------------------------|------------------------------|---------------------------------------|
| 1891.....   | 12,273                    | \$189,868,000                | 1.07                                  |
| 1892.....   | 10,344                    | 114,044,000                  | 0.88                                  |
| 1893.....   | 15,242                    | 346,779,000                  | 1.28                                  |
| 1894.....   | 13,885                    | 172,992,000                  | 1.25                                  |
| 1895.....   | 13,197                    | 173,196,000                  | 1.09                                  |
| 1896.....   | 15,088                    | 226,096,000                  | 1.31                                  |
| 1897.....   | 13,351                    | 154,332,000                  | 1.26                                  |
| 1898.....   | 12,186                    | 130,662,000                  | 1.10                                  |
| 1899.....   | 9,337                     | 90,879,000                   | 0.81                                  |
| 1900.....   | 10,774                    | 138,495,000                  | 0.92                                  |
| 1901.....   | 11,002                    | 113,092,000                  | 0.90                                  |
| 1902.....   | 11,615                    | 117,476,000                  | 0.93                                  |
| 1903.....   | 12,069                    | 155,444,000                  | 0.94                                  |
| 1904.....   | 12,199                    | 144,202,000                  | 0.92                                  |
| 1905.....   | 11,520                    | 102,676,000                  | 0.85                                  |
| 1906.....   | 10,682                    | 119,201,000                  | 0.77                                  |
| 1907.....   | 11,725                    | 197,385,000                  | 0.82                                  |
| 1908.....   | 15,690                    | 222,315,000                  | 1.08                                  |
| 1909.....   | 12,924                    | 154,603,000                  | 0.80                                  |
| 1910.....   | 12,652                    | 201,757,000                  | 0.80                                  |
| 1911.....   | 13,441                    | 191,061,000                  | 0.81                                  |
| 1912.....   | 15,452                    | 203,117,000                  | 0.98                                  |
| 1913.....   | 16,037                    | 272,672,000                  | 0.99                                  |
| 1914.....   | 18,280                    | 357,908,000                  | 1.10                                  |
| 1915.....   | 22,156                    | 302,286,000                  | 1.32                                  |
| 1916.....   | 16,993                    | 196,212,000                  | 0.99                                  |
| 1917.....   | 13,855                    | 182,441,000                  | 0.80                                  |
| 1918.....   | 9,982                     | 163,019,000                  | 0.58                                  |
| 1919.....   | 6,451                     | 113,291,000                  | 0.38                                  |
| 1920.....   | 8,881                     | 295,121,000                  | 0.49                                  |

\* From "Dun's Review," V. 29, No. 1424, p. 18-19.

1 per cent. The percentage is always too close to zero for comparative purposes. Moreover, the continual change of the base prevents exact comparison between corresponding periods.

**Commercial failures as a business barometer.**—The fact that the trend of commercial failures indicates so accurately current business conditions makes the number of failures one of the most satisfactory business barometers. The problem of successful forecasting would be greatly simplified if it were possible truly to appreciate conditions at the time they exist. The knowledge that a certain company is not making satisfactory profits can be withheld until the annual statement is

CHART XXI.—COMMERCIAL FAILURES IN THE UNITED STATES: 1890-1920.





issued, probably months later. But the knowledge that any company is unable to arrange payment of its maturing obligations becomes current immediately, and serves as a barometer of what the near future has in store.

The trend of commercial failures has almost invariably foretold the trend of business conditions. When business failures continue to decrease until they approximate previous low records, the storm flags signal danger ahead. After the reaction has come, the number increases. The barometer does not work so well in periods of depression, but recovery cannot be assumed to have definitely started until there is an appreciable decrease in the number of failures.<sup>8</sup>

#### NEW SECURITY ISSUES

**The financial policy of corporations.**—Capital is essential in business. The amount of capital which a company has does not determine its earning power, but it is a contributing factor of large importance. Capital may be secured in either of two ways. The money may be borrowed, in which case bonds are issued; or investors may be induced to become part proprietors in the enterprise, in which event stock is issued. It is obvious that capital requirements will increase in a period of activity, and decrease in a period of depression. Certain requirements, however, are independent of current conditions. As has been stated, when money is borrowed, bonds are issued which have a maturity date some time in the future. At the due date, the company will customarily refund the issue by selling new bonds thus increasing the total of new security issues irrespective of current conditions. In fact, a large share of the new issues during periods of depression arise from such refunding operations, which is one reason why bond issues dominate in times of depression and stock issues are more common in times of prosperity.

**Nature of the issues.**—The income derived from stock depends upon the earnings of the company, whereas the income from bonds is a fixed amount. In time of activity profits increase, and investors naturally desire stock; whereas in times of depression earnings are low and consequently bonds are

<sup>8</sup> In studying the number of commercial failures from month to month, allowance should be made for seasonal tendencies. Failures are usually most numerous in February because of insolvencies arising from year-end settlements.—*New York Evening Post*, February 19, 1921, Sec. 2, p. 1.

more popular. As the period of prosperity continues, the nature of the new offerings become more and more speculative. Investors are no longer content with reasonable profits, demand larger returns, and encourage the offering of securities of the "wild-cat" variety whose chief virtue is the promise of exceptionally large profits. Corporations which are obliged to borrow at this time, do so through issuing short-term notes in anticipation of refunding into long-term bonds at lower interest rates at maturity.

**Reflection of general prosperity.**—The relative facility with which new security issues are floated, i.e., absorbed by the investing public, reflects the extent of general prosperity. As securities must be paid for, the ability to purchase new securities depends upon the earning power of the public. Consequently a large increase in the amount of new issues indicates a corresponding increase in the earning power of the people. The sale of \$3,106,930,000 in new securities in the United States in 1920 was equivalent to an average investment of over \$3,000 by one million individuals.

**The trend of new security issues.**—The volume of new securities issued by private corporations in the United States during the period from 1907 to 1920 is shown in Table No. 57. It will be noted that this compilation does not include

TABLE No. 57.—NEW ISSUES OF SECURITIES BY PRIVATE UNITED STATES CORPORATIONS, 1907-1920\*

|           |                 |
|-----------|-----------------|
| 1907..... | \$1,393,919,000 |
| 1908..... | 1,428,109,000   |
| 1909..... | 1,681,620,000   |
| 1910..... | 1,518,270,000   |
| 1911..... | 1,739,487,000   |
| 1912..... | 2,253,587,000   |
| 1913..... | 1,645,736,000   |
| 1914..... | 1,436,517,000   |
| 1915..... | 1,435,351,000   |
| 1916..... | 2,186,499,000   |
| 1917..... | 1,529,970,000   |
| 1918..... | 1,344,810,000   |
| 1919..... | 3,021,171,000   |
| 1920..... | 3,106,930,000   |

\* *The Journal of Commerce* (N. Y.), January 3, 1921, Part 2, p. 4.

the Liberty bonds of which over \$20,000,000,000 were sold during the war years of 1917, 1918, and 1919. It will be

seen that the amount of new issues increased gradually from 1907 to 1912, which increase reflected more the natural growth of the country and the increasing popularity of the corporate form of organization than any proportionate betterment in business conditions. The decrease in 1917 and 1918 was caused by the unwillingness of private borrowers to compete with the Government in the investment market.

**New security issues as a barometer of business.**—Except in a most general way, the volume of new security issues has little barometric value. The volume increases during periods of activity and decreases in times of depression, but comparative figures are of little utility. Changes in the nature of the securities which are being offered are of significance, as the issuance of highly speculative securities usually marks the close of a period of prosperity. But in the main, the trend of new security issues serves chiefly to substantiate opinions already reached as to the course of economic developments.

One reason, perhaps, why new security issues have failed to prove of greater barometric value has been the haphazard method in which the statistics have been compiled, an objection which applies with even greater force with reference to the record of new incorporations. It is encouraging to note that a more thorough presentation of these statistics has just been started.<sup>9</sup>

<sup>9</sup> By the *Commercial and Financial Chronicle* (N. Y.), as explained in vol. 112, No. 2909, p. 1216.

## CHAPTER X

### BAROMETERS OF THE EXCHANGES

**Function of the exchanges.**—The true function of the exchanges is to provide a meeting-place for buyers and sellers. This applies to all the exchanges whether stock, commodity, or foreign currencies. The facilities provided by the exchanges enable buyers and sellers to consummate transactions through methods which seem inexplicable to the layman. At least one method—short-selling, or legitimately marketing what the seller does not possess—is analogous to the fourth dimension in mathematics. Through the use of “futures,” transactions may be arranged covering engagements to be entered into twelve months hence.

Traders on all exchanges constantly endeavor to discount the future. Present conditions are ever being analyzed to the end that future tendencies may be predetermined. So it is that prices are seldom abruptly disturbed by important economic developments. The official announcement of the total crops each year by the Department of Agriculture is usually without effect, although no factor has a greater influence upon conditions than agricultural production, because the commercial world has kept in close touch with the prospective harvests during the growing season, and has discounted the actual results.

From a barometric standpoint, interest does not center in the exchanges as stabilizers of prices, but as discounters of the future. Nowhere in business does the ability to foretell economic developments receive richer reward than on the exchanges. Market prices on the exchanges are always where the consensus of opinion of the majority of people interested, and this includes the best-posted men in commerce, places them. Otherwise prices would immediately rise or fall as traders backed their judgment in subsequent transactions until the proper level was reached. Prices on the exchanges can never be too high or too low in the opinion of a majority of the people as it is the opinion of the majority of the people that makes them what they are.

**Relation of the individual opinion to the majority opinion.**—The opinion of an individual on the exchanges may differ from that of the majority, but sight should not be lost of the fact that the majority opinion does not solely determine the market price. Prices are the consensus of opinion which is really the majority opinion as qualified by the minority, or, more accurately, the equilibrium between all opinions. No single opinion which finds expression in a transaction upon the exchanges is without its effect.

A method of thus measuring the consensus of opinion of the best-informed persons as to future development should therefore have considerable barometric value. One should have to be egotistical indeed to be guided solely by his own judgment of the future before carefully considering the opinions of others. The operations of the exchanges provide an opportunity for keeping in touch with outside opinion.

#### THE STOCK EXCHANGES

**Transactions on the stock exchanges.**—Discussion of the operations of the stock exchanges will be confined to the New York Stock Exchange as it is the largest of the American exchanges and the volume of transactions greatly exceeds the combined total of all other American stock exchanges.

Stock exchange transactions act as criteria of business conditions from two aspects, namely, the volume of sales and the market prices. Although the number of actual buyers must always equal the number of actual sellers, it is none the less a fact that at times buyers are in the majority and at other times sellers predominate. Of course what is meant is that prospective buyers exceed in number prospective sellers, or vice versa. When prospective buyers predominate, prices naturally advance and create what is known as a "bull" movement; when prospective sellers are in the majority, prices fall and a "bear" movement exists.<sup>1</sup>

**The volume of transactions.**—In a period of activity business profits increase. As the market price of corporate stocks is determined chiefly by the earning power, present and prospective, of the company, any circumstances which promise to

<sup>1</sup> The etymology of the terms "bull" and "bear" is significant: a bull is an animal with a proclivity to elevate objects; a bear is more inclined to tear things down.



TABLE No. 58.—NUMBER OF SHARES SOLD AT NEW YORK STOCK EXCHANGE MONTHLY, 1911-1920\*

| Month        | 1911        | 1912        | 1913       | 1914       | 1915        | 1916        | 1917        | 1918        | 1919        | 1920        |
|--------------|-------------|-------------|------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|
| January..... | 10,461,526  | 10,906,138  | 8,748,973  | 10,088,895 | 5,076,210   | 15,956,944  | 16,939,440  | 13,616,357  | 11,858,465  | 19,880,166  |
| February.... | 10,194,217  | 7,086,544   | 6,763,632  | 6,220,059  | 4,383,449   | 12,126,205  | 13,588,465  | 11,418,079  | 12,210,741  | 21,865,303  |
| March.....   | 6,823,868   | 14,552,052  | 7,229,732  | 5,855,260  | 7,862,308   | 15,197,585  | 18,658,267  | 8,419,477   | 21,403,531  | 29,008,749  |
| 1st quarter  | 27,479,611  | 32,544,734  | 22,742,337 | 22,164,214 | 17,321,967  | 43,280,734  | 49,186,172  | 33,453,913  | 45,472,737  | 70,754,218  |
| April.....   | 5,369,350   | 15,959,338  | 8,463,226  | 7,145,284  | 21,022,930  | 12,523,507  | 14,258,162  | 7,404,174   | 28,587,431  | 28,447,239  |
| May.....     | 11,115,578  | 13,662,747  | 5,463,561  | 4,757,405  | 12,581,040  | 16,427,576  | 19,354,400  | 21,139,092  | 34,413,553  | 16,642,242  |
| June.....    | 10,508,400  | 7,219,721   | 9,588,174  | 4,002,748  | 11,004,042  | 12,823,833  | 19,092,653  | 11,772,261  | 32,860,365  | 9,354,267   |
| 2d quarter   | 26,993,328  | 36,841,806  | 23,514,961 | 15,905,437 | 44,608,012  | 41,774,916  | 52,705,215  | 40,315,527  | 95,861,349  | 54,443,748  |
| July.....    | 5,467,559   | 7,158,324   | 5,124,015  | 7,920,924  | 14,371,633  | 9,187,868   | 13,325,365  | 8,449,888   | 34,502,242  | 12,541,922  |
| August.....  | 14,994,533  | 8,952,358   | 6,086,374  | Exchange   | 20,432,350  | 14,626,082  | 11,636,853  | 6,887,589   | 24,432,647  | 13,728,598  |
| September... | 17,395,957  | 10,107,204  | 7,682,304  | closed     | 18,399,286  | 29,992,582  | 13,822,775  | 7,763,068   | 24,141,830  | 15,296,356  |
| 3d quarter   | 37,858,049  | 26,217,886  | 18,892,693 | 7,920,924  | 53,203,269  | 53,806,532  | 38,784,993  | 23,100,545  | 83,076,719  | 41,566,876  |
| October..... | 10,936,901  | 14,166,896  | 7,403,029  | Exchange   | 26,678,953  | 28,161,277  | 17,368,787  | 20,671,337  | 37,354,859  | 13,667,289  |
| November...  | 14,919,486  | 8,725,317   | 3,765,595  | closed     | 17,634,270  | 34,552,860  | 14,816,058  | 14,651,844  | 30,169,478  | 22,069,391  |
| December...  | 9,055,883   | 12,631,786  | 7,152,078  | 1,909,993  | 13,698,732  | 31,735,674  | 12,767,723  | 11,923,303  | 24,852,583  | 24,138,878  |
| 4th quarter  | 34,912,270  | 35,523,999  | 18,320,702 | 1,909,993  | 58,011,955  | 94,449,811  | 44,952,568  | 47,248,484  | 92,376,920  | 59,875,558  |
| Year.....    | 127,243,258 | 131,128,425 | 83,470,693 | 47,900,568 | 173,145,203 | 233,311,993 | 185,628,948 | 144,118,469 | 316,787,725 | 226,640,400 |

\* *The Commercial and Financial Chronicle* (N. Y.).

result in increased earnings cause the stock to advance in price not when the profits are actually realized but as soon as the circumstances are known. In the preceding period of inactivity, decreased earnings caused stock prices to fall and acted as a deterrent both to prospective purchasers and sellers. As has previously been shown in describing the cycle of business, the factors which cause depression to be prolonged eventually work out their own salvation and the darkest hour of the period is usually shortly before the morning of business recovery. Traders on the exchanges are quick to observe the first tinges of gray in the business horizon and a buying movement ensues which is well under way before the actual improvement in business becomes appreciable. In the same manner, the end of a period of prosperity is foreseen and the tendency is for the volume of sales to decline at a time when business is apparently most active.

TABLE No. 59.—NUMBER AND AVERAGE PRICE OF SHARES SOLD AT NEW YORK STOCK EXCHANGE, 1897-1920\*

| <i>Year</i> | <i>Number of shares</i> | <i>Average price<br/>(per cent of par)</i> |
|-------------|-------------------------|--------------------------------------------|
| 1897.....   | 77,324,000              | 67.0                                       |
| 1898.....   | 112,699,000             | 72.7                                       |
| 1899.....   | 176,421,000             | 78.6                                       |
| 1900.....   | 138,380,000             | 69.2                                       |
| 1901.....   | 265,944,000             | 79.0                                       |
| 1902.....   | 188,503,000             | 79.9                                       |
| 1903.....   | 161,102,000             | 73.2                                       |
| 1904.....   | 187,312,000             | 69.9                                       |
| 1905.....   | 263,081,000             | 87.3                                       |
| 1906.....   | 284,293,000             | 94.2                                       |
| 1907.....   | 196,438,000             | 85.8                                       |
| 1908.....   | 197,206,000             | 86.6                                       |
| 1909.....   | 214,632,000             | 97.5                                       |
| 1910.....   | 164,051,000             | 96.2                                       |
| 1911.....   | 127,208,000             | 95.8                                       |
| 1912.....   | 131,128,000             | 97.7                                       |
| 1913.....   | 83,470,000              | 96.2                                       |
| 1914.....   | 47,900,000†             | 93.2                                       |
| 1915.....   | 173,145,000             | 85.1                                       |
| 1916.....   | 233,311,000             | 93.8                                       |
| 1917.....   | 185,628,000             | 91.2                                       |
| 1918.....   | 144,118,000             | 92.8                                       |
| 1919.....   | 316,787,000             | 90.0                                       |
| 1920.....   | 226,640,000             | 83.6                                       |

\* From *The Commercial and Financial Chronicle* (N. Y.), V, 112, No. 2899, p. 205.

† Stock exchange closed from July 30 to December 12, 1914.

**Stock exchange prices.**—The prices on the exchanges, as has been said, represent a consensus of opinion on the part of the general public as to the present value of the securities.<sup>2</sup> Prospective earnings are always more important than current earnings in determining prices. Even in periods of depression when current earnings are low, the prospect that earnings will increase in the not distant future causes stock prices to advance; and in periods of prosperity, when current earnings are exceptionally large, the probability of smaller earnings in the future causes prices to decline.

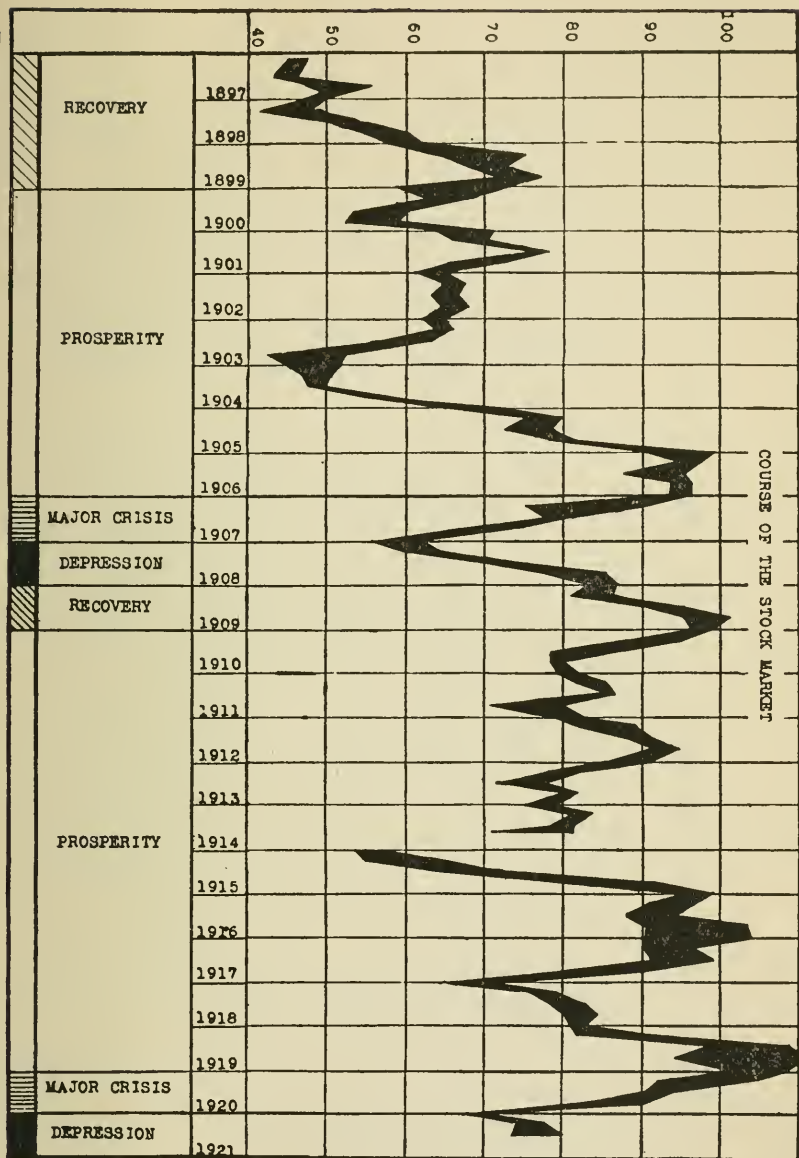
**Industrial stock prices are most significant.**—Of the three classes of stocks—rails, utilities, and industrials—the industrials are of greatest barometric value. This is because the earnings of this class fluctuate in close accordance with business conditions. Utility earnings have too large an element of stability irrespective of changing conditions, and railroad earnings are open to the same objections although in a smaller degree. An improvement in business conditions means a corresponding improvement in the earnings of industrial companies, and, by the same token, a betterment in the price of industrial stocks. A depression in business adversely affects industrial earnings and causes industrial stock prices to decline. But of especial barometric interest is the fact that the trend in the prices of the stocks usually precedes the trend in conditions because of the constant endeavor of the market to predetermine developments. The men who are in closest touch with current conditions sense the change before it actually comes and the stock market reflects their opinion.<sup>3</sup>

Although the trend of industrial stock prices moves ahead of the trend in general conditions, it is nevertheless an effect and not a cause of the improvement or depression that it precedes.

<sup>2</sup> "The market is not like a balloon plunging hither and thither in the wind. As a whole, it represents a serious, well considered effort on the part of farsighted and well-informed men to adjust prices to such values as exist or which are expected to exist in the not too remote future."—"The ABC of Stock Speculation," S. A. Nelson, p. 44.

<sup>3</sup> The writer inclines to the opinion that the list of industrial stocks represented in the average price indexes compiled by the leading periodicals is not well chosen for barometric purposes. The companies which are first affected by changing conditions are those which supply raw materials and producers' goods. On this basis the following list of ten industrial common stocks is suggested: United States Steel, General Electric, American Locomotive, American Wool, Kennecott Copper, International Paper, American Hide and Leather, Allis-Chalmers, National Lead, and United States Rubber.

CHART XXII.—TREND OF INDUSTRIAL STOCKS ON THE NEW YORK STOCK EXCHANGE: 1896-1920.



From Wall Street Journal.

TABLE No. 60.—AVERAGE PRICES OF TWENTY-FIVE INDUSTRIAL STOCKS ON NEW YORK STOCK EXCHANGE FROM 1911 TO 1920\*

(end of month prices)

| Month         | 1911  | 1912  | 1913  | 1914  | 1915   | 1916   | 1917  | 1918  | 1919   | 1920   |
|---------------|-------|-------|-------|-------|--------|--------|-------|-------|--------|--------|
| January.....  | 67.30 | 62.14 | 64.47 | 61.36 | 54.78  | 95.23  | 86.55 | 78.02 | 81.42  | 119.21 |
| February..... | 64.46 | 63.13 | 61.23 | 60.26 | 53.20  | 95.56  | 89.14 | 77.33 | 86.39  | 103.62 |
| March.....    | 65.85 | 68.01 | 61.33 | 60.93 | 59.03  | 98.26  | 92.61 | 75.63 | 91.41  | 123.82 |
| April.....    | 65.28 | 69.63 | 57.20 | 58.14 | 69.82  | 93.82  | 88.54 | 77.58 | 96.37  | 111.38 |
| May.....      | 68.35 | 68.88 | 56.64 | 59.48 | 63.92  | 94.26  | 95.57 | 77.39 | 105.40 | 109.81 |
| June.....     | 67.36 | 70.60 | 53.96 | 57.80 | 69.15  | 90.74  | 93.58 | 83.80 | 109.36 | 112.96 |
| July.....     | 67.25 | 70.69 | 56.95 | 48.76 | 77.44  | 89.89  | 90.65 | 82.40 | 113.20 | 105.66 |
| August.....   | 60.42 | 71.94 | 59.65 | ..... | 84.06  | 95.47  | 82.54 | 83.45 | 111.22 | 103.64 |
| September...  | 58.18 | 74.07 | 59.58 | ..... | 95.89  | 108.23 | 81.98 | 83.11 | 122.16 | 102.42 |
| October.....  | 58.06 | 70.79 | 56.02 | ..... | 104.67 | 112.17 | 70.26 | 85.81 | 134.45 | 102.26 |
| November...   | 62.42 | 70.67 | 54.41 | ..... | 100.47 | 113.27 | 70.68 | 82.79 | 114.06 | 86.85  |
| December...   | 68.83 | 66.11 | 56.05 | 52.30 | 100.78 | 95.88  | 69.94 | 83.26 | 126.23 | 81.90  |

NOTE.—Stock exchange closed from July 30 to December 12, 1914.

\* Compiled from *The Annalist*, V. 17, No. 416, p. 42.



One of the great difficulties in forecasting is to differentiate between cause and effect. Few developments in financial circles—Wall Street, Lombard Street, or elsewhere—are causes of changes in business conditions. What happens on the exchanges is an effect of what has happened or will happen elsewhere, and not a cause. Stock exchange transactions do not offer an independent field for fundamental barometric research as in themselves they comprise a composite result of barometric surveys made precisely along the lines indicated in the present volume. They are valuable solely as representing the general opinion as to the course of events, and not as a factor with direct influence upon succeeding developments.

**The stock exchange as a business barometer.**—Stock exchange transactions serve as a barometer both in the volume of sales and the trend of prices. An increase in the number of shares traded in daily during a period of business depression indicates that recovery in general business conditions is not far distant. A decrease in the number of shares traded in daily during a period of prosperity signifies that reaction in business conditions may be expected.

The prices of industrial stocks have a greater significance than prices of the rails, or the utilities, or combined average prices. This is because of the tendency of industrial earnings to follow the general trend of business conditions more closely than do the others. As the stock exchange endeavors to discount the future, an advance in prices, especially, as has been said, of industrial stocks during a period of depression foreshadows a resumption of commercial activity; and a decline in prices during a period of activity presages a downward swing of the business cycle in the near future.<sup>4</sup>

\*“In the long run, the course of stock exchange prices is governed by future prospects. At times—for comparatively short intervals, but long enough to be deceptive unless correctly interpreted—the course of the market has its major influence in the mood of the community which may be haphazard pessimism or optimism rather than reasoned despondency or cheerfulness. The distinction is sometimes important because the spirit of pessimism, when it gains absolute control, paints everything in the news with a gloomy color. Visible increase in railway traffic over preceding months suggests only the unfavorable contrast with a year ago. An order for decrease of railway wages calls forth only the comment first, that the reduction should have been larger, and, second, that the laborers will strike against it. Much larger consumption of cotton, officially reported, merely drives Wall Street to renewed examination of the large figures of unsold supplies; movement of foreign exchange in favor of New York is construed as evidence of progressively worse conditions abroad; reduction of the Reserve Bank rate is dismissed as testimony to idleness of capital in a prostrated state of industry, and so on.”—Alexander D. Noyes in *The New York Times*, June 20, 1921.

## THE COMMODITY EXCHANGES

**Transactions on the Commodity Exchanges.**—Transactions on the commodity exchanges differ in many respects from those on the stock exchanges. Hedging operations cause many transactions to be consummated, irrespective of price, in order that business men may protect their regular commercial profit from loss through price fluctuations while commodities are in their possession. What is termed "short-selling" on the stock exchanges is termed dealing in "futures" on the commodity exchanges. No overhead expense is incurred in carrying securities (except dividends on short sales) as happens in the case of commodities, and this factor tends to make confusing the spread between "spot" and "future" prices on the commodity exchanges.

At first thought, prices of "futures" seem to have a greater barometric value than "spot," or present, prices. As is shown in Table No. 61, the daily quotations of the cotton exchanges give prices not only for the current month but for the succeeding eleven months as well. As a matter of fact the future prices are dependent chiefly upon the present price, and any change in the current quotation is immediately reflected in the future prices.

TABLE No. 61.—CLOSING PRICES ON THE NEW YORK COTTON EXCHANGE, JUNE 10, 1921\*  
(Middling upland)

|                        | <i>Cents</i> |
|------------------------|--------------|
| Spot .....             | 12.50        |
| Futures:               |              |
| July (1921) .....      | 12.35        |
| August (1921) .....    | 12.63        |
| September (1921) ..... | 12.94        |
| October (1921) .....   | 13.14        |
| November (1921) .....  | 13.38        |
| December (1921) .....  | 13.63        |
| January (1922) .....   | 13.73        |
| February (1922) .....  | 13.86        |
| March (1922) .....     | 14.00        |
| April (1922) .....     | 14.12        |
| May (1922) .....       | 14.25        |

\* *The Commercial and Financial Chronicle* (N. Y.), V. 112, No. 2920, p. 2550.

The spread, or difference, between present and future prices is due to the cost of carrying the commodities between the har-

vests. The carrying cost includes interest on the money invested, storage charges, and insurance premiums, all of which must be added to the current price.<sup>5</sup>

Future prices depend therefore upon present prices on the commodity exchanges. Present prices, however, are affected chiefly by future conditions.<sup>6</sup>

The commodity exchanges as business barometers.—The ability of men in business to foretell the future has its best exemplification on the commodity exchanges. The small percentage of ignorant traders is in distinct contrast to the large number who operate on the stock exchanges. Traders on the commodity exchanges are well-informed men who do not act before they have made a careful analysis of each influencing factor. They fully appreciate the law of causality and realize that what will happen in the future depends upon what occurs in the present. To this end they maintain extensive organizations the purpose of which is to keep fully informed of every factor, however minute, which may affect the situation.

The fact that the prices of the commodities which are most extensively dealt in on the exchanges—cotton, wheat, corn, sugar, coffee, copper, etc.—are the first to be affected when prices change has been referred to previously. This is not due to fortuitous circumstance but is chiefly attributable to the ability of the traders to foretell the trend of conditions. Prices rise and fall in accordance with conditions of demand and supply. The commodity exchanges watch both factors closely as they change from day to day and cause prices to change in accordance with the relative balance and lack of balance between the two. The producers endeavor to regulate

\* "But it will be asked, why should July (1911) wheat be sold at 93½ cents, when May wheat, representing an earlier month, sells on the same day at \$1.04½? Here it must be remembered that these prices, besides including the expense items just mentioned, must also reflect the discounting process which speculators always have in mind when selling grain for future delivery. Consequently, we find dealers on October 10, 1910, selling wheat for delivery in July, 1911, and in doing so they are already looking towards next year's crop, which begins to come on the market in July, whereas May wheat has reference to the old crop harvested in 1910."—"American Produce Exchange Markets," S. S. Huebner, in *The Annals*, V. XXXVIII, No. 2, p. 7.

\* "The markets of the world, whether in coffee or cotton or anything else, go more by the prospects and by the probable future production than by the immediate supply."—Testimony of Herman Sielcken, of Crossman & Sielcken, the largest dealers in green coffee in America, before Pujo Committee.—"Money Trust Investigation," Part I, p. 59.

the supply to meet the demand, and the traders on the commodity exchanges "keep the score."

Prices on the commodity exchanges are therefore of particular barometric importance. Prices move in sequence, from raw materials to finished products to wholesale prices to retail prices to wages, and almost invariably the beginning is in the commodity markets. Prices on the commodity exchanges have a double significance. They represent the opinion of the best-posted men in the country as to future developments. But even more important, in the money economy of modern commerce, they indicate whether business conditions will be prosperous or otherwise, in foretelling whether general prices will rise or fall.

Tables Nos. 62 to 70 show the trend of prices on the commodity exchanges from 1911 to 1920. It will be noted that metal prices lag behind those of agricultural products.

#### FOREIGN EXCHANGES

**The function of Foreign Exchange.**—The term foreign exchange means the exchange of foreign currencies.<sup>7</sup> American purchases abroad must be paid for in the currency of the selling nation, and accordingly dollars must be exchanged for francs, lira, or as the case may be. American sales abroad must be eventually paid for in dollars which requires that foreign purchasers exchange their currency for dollars. Under ordinary circumstances, a charge is imposed for the service which is limited by the cost of actually shipping gold which, regardless of the die stamp, is international currency. The amount of the charge—which strange to say is sometimes a credit—depends upon the relationship between the demand for the particular currency at a given place and the supply which is available at that location. Demand and supply, in turn, are normally predicated upon the volume of merchandise shipments between the two countries.

**Effect upon domestic conditions.**—When a charge is made for the exchange of currencies, the currency being offered in exchange is said to be at a discount; when a credit is received,

<sup>7</sup> Foreign exchange operations are conducted in this country without a common meeting place of buyers and sellers. Practically all transactions are completed over the telephone. The banks are analogous to retailers and the wholesalers are a comparatively small number of dealers of whom in New York City less than twenty-five are of importance.



the currency is at a premium. A small discount is relatively unimportant but large discounts—such as have existed in the United States since the close of the World War—seriously handicap trade. The loss through depreciated currency causes nations to stop trading with nations whose currency is at a large premium. Consequently the large discount on foreign currencies in the United States has been one of the factors which have adversely affected the international commerce of this country. A betterment in the exchange rates on foreign currencies, i.e., a smaller discount, must have a beneficial effect upon American exports and incidently, American industry.

**Causes of fluctuations in foreign exchange.**—The par of international currencies is determined by the relative gold content of the monetary units. The par of the pound sterling in the United States is \$4.8665 because there is 4.8665 times as much pure gold in the pound sterling as in the American dollar; the par of the French franc and Italian lire is 19.3c because the gold in the franc or the lire is worth 19.3c in American money. European currencies are no longer redeemable in gold, and the premium on the American dollar in those countries—which is the reciprocal of the discount on the European currencies in this country—reflects the premium on gold in Europe rather than the merchandise trade which ordinarily determines the premium or discount.

Another factor which has had large influence upon exchange rates since the close of the World War is speculation. The discounts on many foreign currencies offered large potential profits in the event of any substantial recovery and attracted a multitude of speculators. Speculation in foreign exchange has proved a most unfortunate development because of the relative inability of the speculators to form an intelligent opinion upon which to base their commitments.

**Foreign Exchange as a business barometer.**—Foreign exchange rates under present conditions are of chief barometric value as indicia of foreign conditions. Permanent advances in rates reflect improved conditions in the countries affected, whereas stable or lowering rates signify no betterment. Daily fluctuations are without especial significance as they are chiefly due to speculative operations. Domestic industry will benefit from higher exchange rates since foreign purchasers will be encouraged thereby to buy in this country.



TABLE No. 62.—SPOT PRICES ON THE COMMODITY EXCHANGES, 1911-1920: WHEAT\*

(No. 2, Red, dollars per bushel, at New York)

| Month        | 1911   | 1912   | 1913   | 1914   | 1915   | 1916   | 1917   | 1918   | 1919   | 1920   |
|--------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| January..... | .9800  | 1.0025 | 1.0800 | 1.0000 | 1.3600 | 1.4000 | 1.8100 | 2.2500 | 2.3750 | 2.3650 |
| February.... | .9800  | 1.0375 | 1.1000 | 1.0100 | 1.6150 | 1.5437 | 1.8100 | 2.2500 | 2.3750 | 2.3650 |
| March.....   | .9350  | 1.0462 | 1.1100 | 1.0500 | 1.6300 | 1.3175 | 2.0800 | 2.2500 | 2.3750 | 2.3650 |
| 3 mos. av..  | .9650  | 1.0287 | 1.0990 | 1.0200 | 1.3350 | 1.4204 | 1.9000 | 2.2500 | 2.3750 | 2.3650 |
| April.....   | .9250  | 1.0825 | 1.1200 | 1.0500 | 1.6300 | 1.3800 | 2.2300 | 2.2500 | 2.3750 | 2.3650 |
| May.....     | .9650  | 1.2275 | 1.1500 | 1.0500 | 1.7350 | 1.3200 | 2.9000 | 2.2500 | 2.3750 | 3.0700 |
| June.....    | .9700  | 1.2375 | 1.1200 | 1.1062 | 1.5750 | 1.1800 | 2.8600 | 2.2500 | 2.3750 | 3.1000 |
| 3 mos. av..  | .9533  | 1.1825 | 1.1300 | 1.0687 | 1.6467 | 1.2930 | 2.6630 | 2.2500 | 2.3750 | 2.8450 |
| July.....    | .9475  | 1.1775 | 1.0900 | .8800  | 1.3500 | 1.0800 | 2.5500 | 2.2500 | 2.3750 | 2.9200 |
| August.....  | .9475  | 1.0875 | .9575  | .9850  | 1.2050 | 1.3450 | 2.7000 | 2.3650 | 2.3750 | 2.7000 |
| September... | .9575  | 1.0750 | .9700  | 1.0150 | 1.1275 | 1.5600 | 2.2500 | 2.3650 | 2.3650 | 2.6700 |
| 3 mos. av..  | .9508  | 1.1133 | .9758  | .9600  | 1.2275 | 1.3280 | 2.5000 | 2.3270 | 2.3710 | 2.7630 |
| October..... | 1.0075 | 1.0350 | .9600  | 1.1650 | 1.2100 | 1.6500 | 2.2700 | 2.3650 | 2.3650 | 2.5500 |
| November...  | .9825  | 1.0700 | .9850  | 1.1950 | 1.1900 | 1.8800 | 2.2500 | 2.3650 | 2.3650 | 2.3200 |
| December...  | .9725  | 1.0550 | 1.0000 | 1.2500 | 1.1950 | 1.8300 | 2.2500 | 2.3750 | 2.3650 | 1.8550 |
| 3 mos. av..  | .9875  | 1.0533 | .9817  | 1.2030 | 1.1983 | 1.7870 | 2.2570 | 2.3680 | 2.3650 | 2.2417 |
| Yearly av. . | .9641  | 1.0944 | 1.0460 | 1.0630 | 1.4019 | 1.4571 | 2.3300 | 2.2990 | 2.3715 | 2.5536 |

\* As reported in "Pretace-Hall Business Information Service."

TABLE No. 63.—SPOT PRICES ON THE COMMODITY EXCHANGES, 1911-1920: CORN\*

(Corn, dollars per bushel, at Chicago)

| Month        | 1911  | 1912  | 1913  | 1914  | 1915  | 1916   | 1917   | 1918   | 1919   | 1920   |
|--------------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|
| January..... | .4600 | .6900 | .4650 | .6550 | .6850 | .7325  | .9325  | 1.8000 | 1.5000 | 1.4700 |
| February.... | .4675 | .6450 | .4900 | .6250 | .7750 | .7850  | .9700  | 1.7500 | 1.3300 | 1.5000 |
| March.....   | .4550 | .6700 | .5050 | .6350 | .7000 | .7487  | 1.0250 | 1.7000 | 1.3175 | 1.5200 |
| 3 mos. av..  | .4608 | .6683 | .4867 | .6383 | .7200 | .7554  | .9758  | 1.7500 | 1.3825 | 1.4967 |
| April.....   | .4600 | .7450 | .5400 | .6650 | .7200 | .7500  | 1.2300 | 1.6500 | 1.6000 | 1.6900 |
| May.....     | .5400 | .8025 | .5675 | .6700 | .7850 | .7800  | 1.5250 | 1.6000 | 1.6050 | 1.8900 |
| June.....    | .5425 | .7350 | .5825 | .7000 | .7775 | .6925  | 1.5800 | 1.5000 | 1.7300 | 1.8800 |
| 3 mos. av..  | .5142 | .7608 | .5633 | .6783 | .7608 | .7408  | 1.4450 | 1.5833 | 1.6450 | 1.8200 |
| July.....    | .5975 | .7400 | .6050 | .6825 | .7575 | .7800  | 1.7750 | 1.6000 | 1.7950 | 1.7500 |
| August.....  | .6275 | .7400 | .6637 | .7400 | .7950 | .8200  | 2.3150 | 1.6500 | 1.9700 | 1.4000 |
| September... | .6550 | .7825 | .7575 | .7900 | .7525 | .8550  | 1.9500 | 1.5500 | 1.7700 | 1.4800 |
| 3 mos. av..  | .6267 | .7542 | .6754 | .7375 | .7683 | .8183  | 1.6800 | 1.6000 | 1.8450 | 1.5433 |
| October..... | .6950 | .6850 | .7125 | .7200 | .6250 | .8875  | 1.9600 | 1.3500 | 1.4500 | 1.0300 |
| November...  | .7325 | .5850 | .7250 | .7500 | .6375 | 1.0300 | 2.1600 | 1.3500 | 1.4350 | .8950  |
| December...  | .6800 | .5000 | .7300 | .6375 | .6950 | .9000  | 1.8000 | 1.3500 | 1.5000 | .7300  |
| 3 mos. av..  | .7025 | .5900 | .7225 | .7025 | .6525 | .9392  | 1.9733 | 1.3500 | 1.4500 | .8850  |
| Yearly av. . | .5760 | .6933 | .6119 | .6891 | .7254 | .8134  | 1.5185 | 1.5708 | 1.5806 | 1.4362 |

\* As reported in "Prentice-Hall Business Information Service."

TABLE No. 64.—SPOT PRICES ON THE COMMODITY EXCHANGES, 1911-1920: COTTON\*

(Middling upland, cents per pound, at New York)

| <i>Month</i> | <i>1911</i> | <i>1912</i> | <i>1913</i> | <i>1914</i> | <i>1915</i> | <i>1916</i> | <i>1917</i> | <i>1918</i> | <i>1919</i> | <i>1920</i> |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| January..... | 14.90       | 9.35        | 13.10       | 12.50       | 7.90        | 12.30       | 17.40       | 31.65       | 31.65       | 39.25       |
| February.... | 14.95       | 10.00       | 13.05       | 12.75       | 8.45        | 11.85       | 14.30       | 31.65       | 26.10       | 39.50       |
| March.....   | 14.55       | 10.40       | 12.70       | 13.05       | 8.35        | 11.55       | 17.45       | 32.70       | 26.90       | 39.85       |
| 3 mos. av..  | 14.80       | 9.91        | 12.95       | 12.76       | 8.23        | 11.90       | 16.38       | 32.00       | 28.21       | 39.53       |
| April.....   | 14.40       | 10.85       | 12.70       | 13.50       | 9.65        | 12.10       | 19.10       | 34.25       | 28.30       | 41.75       |
| May.....     | 15.45       | 11.30       | 11.85       | 13.00       | 10.40       | 12.20       | 20.40       | 26.85       | 28.80       | 41.40       |
| June.....    | 15.75       | 11.50       | 11.80       | 14.50       | 9.60        | 12.70       | 22.65       | 29.55       | 33.30       | 40.00       |
| 3 mos. av..  | 15.20       | 11.21       | 12.11       | 13.66       | 9.88        | 12.33       | 20.71       | 30.21       | 30.13       | 41.05       |
| July.....    | 14.80       | 11.65       | 12.30       | 13.25       | 9.45        | 13.15       | 27.15       | 31.90       | 34.95       | 39.25       |
| August.....  | 12.75       | 13.10       | 12.10       | 12.50       | 9.30        | 13.25       | 25.20       | 29.70       | 34.20       | 40.00       |
| September... | 11.75       | 11.25       | 12.50       | .....       | 9.85        | 16.30       | 23.30       | 36.50       | 32.10       | 33.50       |
| 3 mos. av..  | 13.10       | 12.00       | 12.30       | 12.87       | 9.53        | 14.23       | 25.21       | 32.70       | 33.75       | 37.58       |
| October..... | 10.20       | 11.25       | 14.10       | 8.25        | 11.85       | 15.95       | 25.30       | 35.15       | 31.80       | 25.50       |
| November...  | 9.45        | 11.75       | 14.10       | .....       | 12.25       | 19.00       | 28.75       | 30.20       | 39.45       | 22.60       |
| December...  | 9.25        | 13.10       | 13.40       | 7.75        | 12.45       | 20.30       | 31.00       | 29.05       | 39.45       | 16.65       |
| 3 mos. av..  | 9.63        | 12.03       | 13.86       | 8.00        | 12.18       | 18.41       | 28.35       | 31.46       | 36.90       | 21.58       |
| Yearly av.   | 13.18       | 11.29       | 12.80       | 11.82       | 9.95        | 14.22       | 22.66       | 31.59       | 32.25       | 34.10       |

\* As reported in "Prentice-Hall Business Information Service."

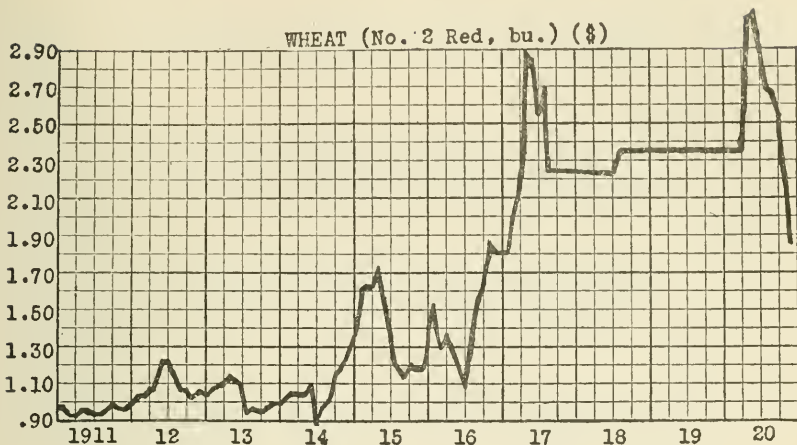


CHART XXIV.—TREND OF CORN PRICES: 1910-1920.

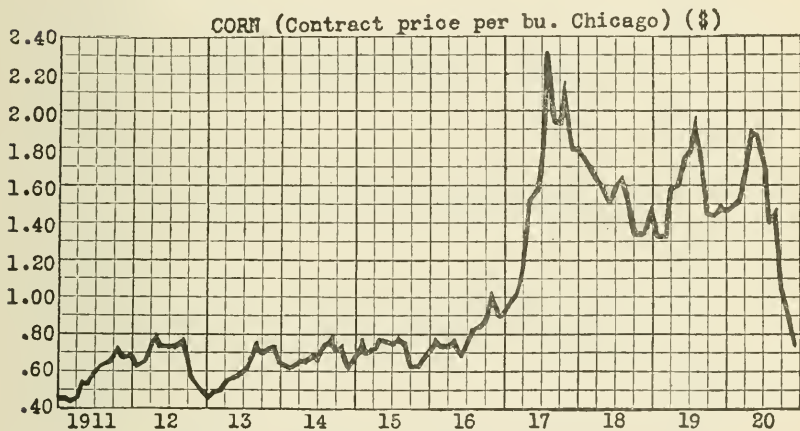


CHART XXV.—TREND OF COTTON PRICES: 1910-1920.

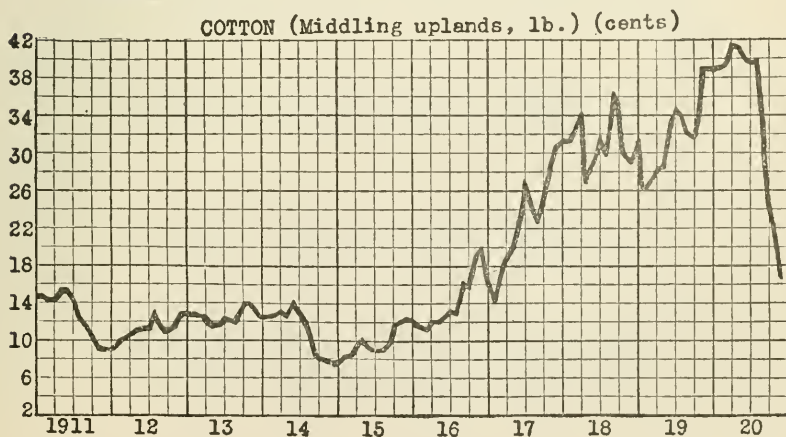


TABLE No. 65.—SPOT PRICES ON THE COMMODITY EXCHANGES, 1911-1920: WOOL\*  
(Ohio, Pennsylvania and West Virginia, cents per pound, at Boston)

| Month             | 1911  | 1912  | 1913  | 1914  | 1915  | 1916  | 1917  | 1918  | 1919  | 1920   |
|-------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|
| January.....      | 26.00 | 25.00 | 28.00 | 22.00 | 26.00 | 32.00 | 45.00 | 75.00 | 66.00 | 94.00  |
| February....      | 25.00 | 26.00 | 27.00 | 23.00 | 30.00 | 32.00 | 47.00 | 75.00 | 64.00 | 98.00  |
| March.....        | 24.00 | 26.00 | 25.00 | 23.00 | 32.00 | 33.00 | 50.00 | 75.00 | 64.00 | 100.00 |
| 3 mos. av..       | 25.00 | 25.67 | 26.67 | 22.67 | 29.33 | 32.33 | 47.33 | 75.00 | 64.67 | 97.33  |
| April.....        | 23.00 | 26.00 | 25.00 | 23.00 | 29.00 | 33.00 | 53.00 | 75.00 | 70.00 | 90.00  |
| May.....          | 22.50 | 26.00 | 22.00 | 24.00 | 29.00 | 33.00 | 55.00 | 75.00 | 70.00 | 80.00  |
| June.....         | 22.00 | 26.00 | 22.00 | 26.00 | 28.00 | 33.00 | 70.00 | 74.00 | 73.00 | 70.00  |
| 3 mos. av..       | 22.50 | 26.00 | 23.00 | 24.33 | 28.67 | 33.00 | 59.33 | 74.67 | 71.00 | 80.00  |
| July.....         | 23.00 | 27.00 | 22.00 | 27.00 | 29.00 | 34.00 | 73.00 | 75.00 | 78.00 | 72.00  |
| August.....       | 23.00 | 27.00 | 22.00 | 27.00 | 30.00 | 35.00 | 74.00 | 75.00 | 83.00 | 70.00  |
| September..       | 24.00 | 28.00 | 22.00 | 26.00 | 30.00 | 36.00 | 75.00 | 74.00 | 83.00 | 65.00  |
| 3 mos. av..       | 23.33 | 27.33 | 22.00 | 26.67 | 29.67 | 35.00 | 74.00 | 74.67 | 81.33 | 69.00  |
| October.....      | 24.00 | 28.00 | 22.00 | 24.00 | 30.00 | 36.00 | 75.00 | 75.00 | 83.00 | 70.00  |
| November... 24.50 |       | 28.00 | 22.00 | 25.00 | 30.00 | 38.00 | 75.00 | 75.00 | 85.00 | 60.00  |
| December... 24.50 |       | 28.00 | 22.00 | 25.00 | 31.00 | 42.00 | 75.00 | 74.00 | 88.00 | 50.00  |
| 3 mos. av.. 25.00 |       | 28.00 | 22.00 | 24.67 | 30.33 | 38.67 | 75.00 | 74.67 | 85.33 | 60.00  |
| Yearly av. 23.83  |       | 26.75 | 23.42 | 24.58 | 29.50 | 34.75 | 63.91 | 74.75 | 75.58 | 76.58  |

\* As reported in "Prentice-Hall Business Information Service."



TABLE No. 66.—SPOT PRICES ON THE COMMODITY EXCHANGES, 1911-1920: COFFEE\*

(No. 7 Rio, cents per pound, at New York)

| Month        | 1911   | 1912   | 1913   | 1914  | 1915  | 1916  | 1917   | 1918   | 1919   | 1920   |
|--------------|--------|--------|--------|-------|-------|-------|--------|--------|--------|--------|
| January....  | 13.250 | 14.500 | 13.875 | 9.125 | 7.500 | 7.625 | 9.750  | 8.000  | 17.250 | 15.000 |
| February.... | 13.000 | 14.270 | 13.500 | 9.500 | 8.250 | 8.500 | 10.000 | 8.750  | 14.500 | 16.000 |
| March.....   | 12.375 | 14.375 | 12.625 | 9.125 | 7.750 | 9.375 | 9.875  | 8.500  | 15.500 | 14.750 |
| 3 mos. av..  | 12.875 | 14.381 | 13.330 | 9.250 | 7.830 | 8.500 | 9.875  | 8.410  | 15.750 | 15.250 |
| April.....   | 12.250 | 14.750 | 11.875 | 9.600 | 8.000 | 9.500 | 9.500  | 9.250  | 16.250 | 14.750 |
| May.....     | 11.875 | 14.375 | 11.500 | 8.750 | 7.750 | 9.750 | 10.125 | 8.875  | 18.500 | 15.000 |
| June.....    | 12.250 | 14.125 | 11.625 | 9.000 | 7.125 | 9.875 | 10.250 | 8.625  | 20.000 | 15.250 |
| 3 mos. av..  | 12.125 | 14.416 | 11.670 | 9.117 | 7.625 | 9.708 | 9.958  | 8.916  | 18.250 | 15.000 |
| July.....    | 13.250 | 14.750 | 9.875  | 8.750 | 7.375 | 9.000 | 9.375  | 8.250  | 29.250 | 14.250 |
| August.....  | 13.250 | 14.250 | 9.500  | 7.125 | 7.375 | 9.500 | 9.125  | 8.500  | 23.500 | 11.000 |
| September... | 13.625 | 14.250 | 9.500  | 7.750 | 6.750 | 9.875 | 9.125  | 8.875  | 20.250 | 8.125  |
| 3 mos. av..  | 13.375 | 14.417 | 9.625  | 7.875 | 7.167 | 9.458 | 9.208  | 8.541  | 24.330 | 11.125 |
| October..... | 13.875 | 14.750 | 10.125 | 6.500 | 6.750 | 9.500 | 8.625  | 9.875  | 15.750 | 7.750  |
| November...  | 15.625 | 15.000 | 10.750 | 6.375 | 7.500 | 9.625 | 9.500  | 10.500 | 17.250 | 7.750  |
| December...  | 14.875 | 14.375 | 10.000 | 6.250 | 7.625 | 9.250 | 7.500  | 13.500 | 15.250 | 6.875  |
| 3 mos. av..  | 14.791 | 14.708 | 10.291 | 6.375 | 7.291 | 9.458 | 8.542  | 11.291 | 16.080 | 7.458  |
| Yearly av.   | 13.290 | 14.480 | 11.230 | 8.154 | 7.480 | 9.281 | 9.396  | 9.291  | 18.600 | 12.208 |

\* As reported in "Prentice-Hall Business Information Service."

TABLE No. 67.—SPOT PRICES ON THE COMMODITY EXCHANGES, 1911-1920: SUGAR\*

(Fine granulated, in bbls., dollars per 100 lbs., at New York)

| Month        | 1911 | 1912 | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 | 1920  |
|--------------|------|------|------|------|------|------|------|------|------|-------|
| January..... | 4.80 | 5.70 | 4.95 | 4.20 | 4.95 | 5.95 | 6.85 | 8.35 | 9.00 | 9.00  |
| February.... | 4.60 | 5.45 | 4.40 | 4.15 | 5.05 | 6.00 | 6.75 | 7.45 | 9.00 | 15.00 |
| March.....   | 4.60 | 5.85 | 4.40 | 4.15 | 5.75 | 6.35 | 7.00 | 7.45 | 9.00 | 15.00 |
| 3 mos.av..   | 4.67 | 5.67 | 4.58 | 4.17 | 5.25 | 6.10 | 6.87 | 7.75 | 9.00 | 13.00 |
| April.....   | 4.80 | 5.40 | 4.40 | 3.90 | 5.90 | 7.00 | 7.25 | 7.45 | 9.00 | 14.00 |
| May.....     | 4.90 | 5.25 | 4.15 | 3.85 | 6.00 | 7.40 | 7.50 | 7.45 | 9.00 | 17.50 |
| June.....    | 5.00 | 5.25 | 4.20 | 4.20 | 6.00 | 7.65 | 7.50 | 7.45 | 9.00 | 21.50 |
| 3 mos.av..   | 4.90 | 5.30 | 4.25 | 3.98 | 5.97 | 7.35 | 7.42 | 7.45 | 9.00 | 17.67 |
| July.....    | 5.00 | 5.05 | 4.40 | 4.30 | 6.10 | 7.65 | 7.50 | 7.50 | 9.00 | 22.00 |
| August.....  | 5.65 | 5.15 | 4.65 | 4.40 | 6.10 | 7.65 | 7.50 | 7.50 | 9.00 | 21.00 |
| September... | 6.30 | 5.15 | 4.85 | 7.00 | 5.60 | 7.00 | 8.40 | 7.50 | 9.00 | 17.10 |
| 3 mos.av..   | 5.65 | 5.12 | 4.63 | 5.23 | 5.93 | 7.43 | 7.80 | 7.50 | 9.00 | 20.03 |
| October..... | 6.80 | 5.05 | 4.50 | 6.75 | 4.90 | 6.75 | 8.40 | 9.00 | 9.00 | 13.00 |
| November...  | 6.55 | 4.95 | 4.40 | 5.80 | 5.25 | 7.60 | 8.35 | 9.00 | 9.00 | 12.00 |
| December...  | 6.15 | 4.95 | 4.40 | 5.10 | 6.00 | 7.50 | 8.35 | 9.00 | 9.00 | 8.75  |
| 3 mos.av..   | 6.50 | 4.98 | 4.43 | 5.88 | 5.38 | 7.28 | 8.37 | 9.00 | 9.00 | 11.25 |
| Yearly av.   | 5.43 | 5.27 | 4.47 | 4.82 | 5.63 | 7.04 | 7.62 | 7.93 | 9.00 | 15.49 |

\* As reported in "Prentice-Hall Business Information Service."

CHART XXVI.—TREND OF WOOL PRICES: 1910-1920.

WOOL (O.Pa.&W.Va.Delaine Unwashed,  $\phi$  lb. at Boston)

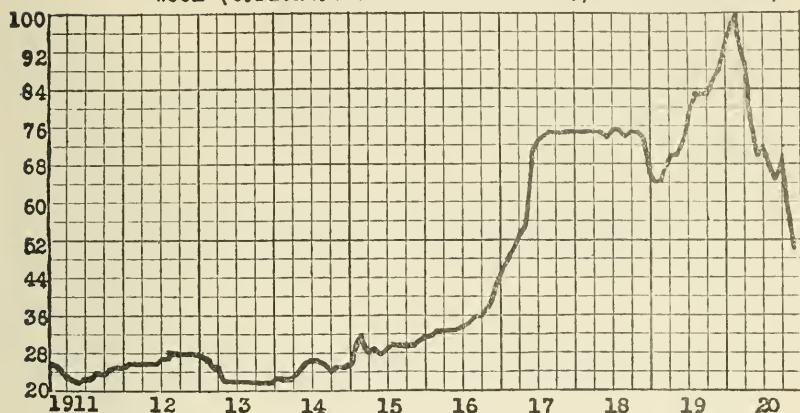


CHART XXVII.—TREND OF COFFEE PRICES: 1910-1920.

COFFEE (No. 7 Rio, lb.) (cents)

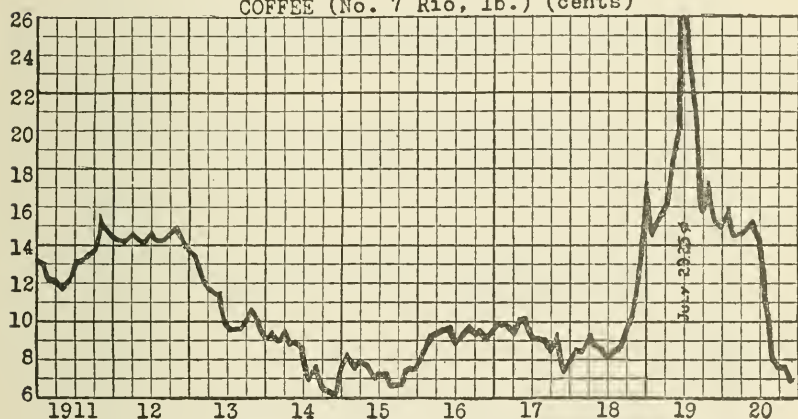


CHART XXVIII.—TREND OF SUGAR PRICES: 1910-1920.

SUGAR (Fine granulated, in bbls. 100 lbs.) (\$)

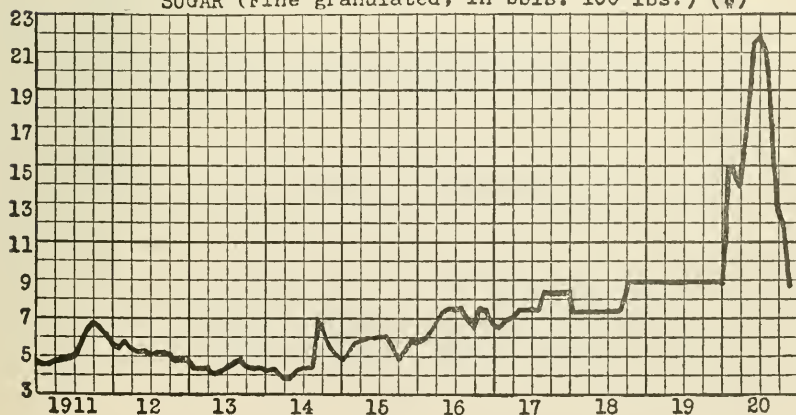


TABLE No. 68.—SPOT PRICES ON THE COMMODITY EXCHANGES, 1911-1920: RUBBER\*

(Up-river, fine, dollars per pound, at New York)

| <i>Month</i> | <i>1911</i> | <i>1912</i> | <i>1913</i> | <i>1914</i> | <i>1915</i> | <i>1916</i> | <i>1917</i> | <i>1918</i> | <i>1919</i> | <i>1920</i> |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| January..... | 1.330       | 1.050       | 1.080       | .730        | .750        | .870        | .780        | .625        | .620        | .470        |
| February.... | 1.280       | 1.105       | 1.020       | .770        | .610        | .740        | .755        | .575        | .585        | .465        |
| March.....   | 1.680       | 1.100       | .990        | .750        | .595        | .760        | .800        | .570        | .585        | .425        |
| 3 mos. av..  | 1.430       | 1.085       | 1.030       | .750        | .651        | .790        | .778        | .590        | .596        | .453        |
| April.....   | 1.450       | 1.170       | .900        | .740        | .570        | .745        | .760        | .590        | .560        | .415        |
| May.....     | 1.250       | 1.110       | .810        | .745        | .600        | .710        | .750        | .690        | .560        | .410        |
| June.....    | .940        | 1.085       | .900        | .710        | .600        | .650        | .760        | .680        | .562        | .380        |
| 3 mos. av..  | 1.213       | 1.121       | .870        | .731        | .590        | .702        | .756        | .653        | .560        | .401        |
| July.....    | .980        | 1.120       | .890        | .690        | .630        | .650        | .690        | .680        | .555        | .362        |
| August.....  | 1.130       | 1.160       | .840        | .720        | .590        | .655        | .685        | .680        | .550        | .340        |
| September... | 1.140       | 1.200       | .900        | .750        | .560        | .695        | .690        | .680        | .545        | .325        |
| 3 mos. av..  | 1.083       | 1.160       | .876        | .720        | .593        | .666        | .688        | .680        | .550        | .342        |
| October..... | 1.120       | 1.090       | .840        | .660        | .550        | .730        | .680        | .680        | .547        | .260        |
| November...  | 1.000       | 1.030       | .740        | .660        | .570        | .760        | .635        | .660        | .530        | .245        |
| December...  | 1.050       | 1.070       | .740        | .680        | .700        | .780        | .560        | .680        | .525        | .205        |
| 3 mos. av..  | 1.056       | 1.063       | .773        | .666        | .606        | .756        | .625        | .673        | .534        | .236        |
| Yearly av.   | 1.195       | 1.107       | .887        | .718        | .610        | .728        | .712        | .649        | .560        | .358        |

\* As reported in "Prentice-Hall Business Information Service."

TABLE No. 69.—SPOT PRICES ON THE COMMODITY EXCHANGES, 1911-1920: PIG IRON\*  
(No. 2X, dollars per ton, at Philadelphia)

| Month        | 1911  | 1912  | 1913  | 1914  | 1915  | 1916  | 1917  | 1918  | 1919  | 1920  |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| January....  | 15.50 | 14.85 | 18.50 | 15.00 | 14.25 | 19.50 | 29.50 | 34.25 | 39.15 | 43.10 |
| February.... | 15.50 | 14.85 | 18.50 | 14.75 | 14.25 | 20.00 | 30.50 | 34.25 | 36.15 | 44.35 |
| March.....   | 15.50 | 14.85 | 18.00 | 15.00 | 14.25 | 20.00 | 33.00 | 34.25 | 36.15 | 45.35 |
| 3 mos. av..  | 15.50 | 14.85 | 18.33 | 14.92 | 14.25 | 19.83 | 31.00 | 34.25 | 37.15 | 44.27 |
| April.....   | 15.50 | 15.00 | 17.75 | 15.00 | 14.25 | 20.25 | 39.00 | 34.25 | 31.90 | 46.05 |
| May.....     | 15.50 | 15.10 | 17.00 | 15.00 | 14.25 | 20.50 | 42.50 | 34.25 | 31.90 | 47.05 |
| June.....    | 15.50 | 15.25 | 16.50 | 14.75 | 14.25 | 20.50 | 45.50 | 34.25 | 29.50 | 47.15 |
| 3 mos. av..  | 15.50 | 15.12 | 17.08 | 14.92 | 14.25 | 20.42 | 42.33 | 34.25 | 31.10 | 46.75 |
| July.....    | 15.00 | 15.50 | 16.00 | 14.75 | 14.25 | 19.75 | 50.75 | 34.40 | 29.50 | 47.15 |
| August.....  | 15.00 | 15.75 | 15.50 | 14.75 | 14.50 | 19.75 | 53.00 | 34.40 | 29.60 | 49.15 |
| September... | 15.00 | 16.00 | 15.75 | 14.75 | 15.50 | 19.50 | 53.00 | 34.40 | 29.60 | 53.35 |
| 3 mos. av..  | 15.00 | 15.75 | 15.75 | 14.75 | 14.75 | 19.67 | 52.25 | 34.40 | 29.57 | 49.88 |
| October..... | 15.00 | 17.80 | 16.00 | 14.75 | 16.25 | 19.50 | 30.00 | 34.40 | 30.60 | 53.51 |
| November...  | 15.00 | 18.00 | 15.75 | 14.50 | 16.25 | 21.00 | 34.25 | 38.85 | 29.35 | 51.54 |
| December...  | 14.85 | 18.50 | 15.50 | 14.50 | 18.25 | 27.50 | 34.25 | 39.15 | 36.10 | 42.79 |
| 3 mos. av..  | 14.95 | 17.83 | 15.75 | 14.58 | 16.92 | 22.67 | 32.83 | 37.47 | 32.02 | 49.28 |
| Yearly av.   | 15.24 | 15.89 | 16.73 | 14.79 | 15.04 | 20.64 | 39.60 | 35.09 | 32.46 | 47.55 |

\* As reported in "Prentice-Hall Business Information Service."



TABLE No. 70.—SPOT PRICES ON THE COMMODITY MARKETS, 1911-1920: COPPER\*

(Lake, cents per pound, at New York)

| Month        | 1911  | 1912  | 1913  | 1914  | 1915  | 1916  | 1917  | 1918  | 1919  | 1920  |
|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| January..... | 13.00 | 14.25 | 17.75 | 15.12 | 13.50 | 22.50 | 30.00 | 23.50 | 26.00 | 19.00 |
| February.... | 12.75 | 14.50 | 16.50 | 15.00 | 14.62 | 26.50 | 32.00 | 23.50 | 20.00 | 19.50 |
| March.....   | 12.75 | 14.50 | 15.00 | 15.00 | 15.25 | 28.00 | 37.25 | 23.50 | 18.00 | 19.25 |
| 3 mos. av..  | 12.83 | 14.42 | 16.42 | 15.04 | 14.46 | 25.66 | 33.08 | 23.50 | 21.33 | 19.25 |
| April.....   | 12.50 | 16.00 | 15.00 | 14.87 | 17.00 | 28.50 | 34.50 | 23.50 | 15.00 | 19.25 |
| May.....     | 12.30 | 16.00 | 15.75 | 14.50 | 21.00 | 29.50 | 29.00 | 23.50 | 15.75 | 19.00 |
| June.....    | 12.45 | 16.75 | 15.75 | 14.37 | 21.00 | 28.00 | 33.00 | 23.50 | 17.00 | 18.75 |
| 3 mos. av..  | 12.42 | 16.25 | 15.50 | 14.58 | 19.67 | 28.67 | 32.17 | 23.50 | 15.92 | 19.00 |
| July.....    | 12.87 | 17.75 | 15.00 | 13.87 | 22.50 | 26.50 | 30.50 | 23.50 | 18.25 | 18.25 |
| August.....  | 12.75 | 17.70 | 15.25 | 13.37 | 19.00 | 26.50 | 27.00 | 26.00 | 24.00 | 19.00 |
| September..  | 12.75 | 17.75 | 16.00 | 13.00 | 18.50 | 28.00 | 27.00 | 26.00 | 24.00 | 19.00 |
| 3 mos. av..  | 12.79 | 17.73 | 15.42 | 13.42 | 20.00 | 27.00 | 28.17 | 25.17 | 22.08 | 18.75 |
| October..... | 12.50 | 17.87 | 16.62 | 12.25 | 18.25 | 28.00 | 23.50 | 26.00 | 23.00 | 18.75 |
| November...  | 12.50 | 17.75 | 16.87 | 11.50 | 17.75 | 28.50 | 23.50 | 26.00 | 22.25 | 15.25 |
| December...  | 13.25 | 17.75 | 15.50 | 12.62 | 19.75 | 35.00 | 23.50 | 26.00 | 19.50 | 14.50 |
| 3 mos. av..  | 12.75 | 17.79 | 16.33 | 12.13 | 18.58 | 30.67 | 23.50 | 26.00 | 21.58 | 16.17 |
| Yearly av.   | 12.70 | 16.55 | 15.92 | 13.79 | 18.18 | 28.00 | 29.23 | 24.55 | 20.23 | 18.29 |

\* As reported in "Prentice-Hall Business Information Service."

# BAROMETERS OF THE EXCHANGES 187 CHART XXIX.—TREND OF RUBBER PRICES: 1910-1920.

RUBBER (Up-river, fine, lb.) (\$)

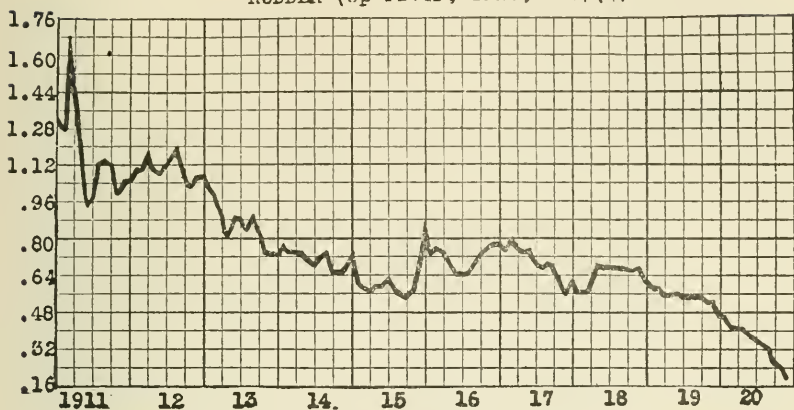


CHART XXX.—TREND OF PIG-IRON PRICES: 1910-1920.

PIG IRON (No. 2X, Phila. ton) (\$)

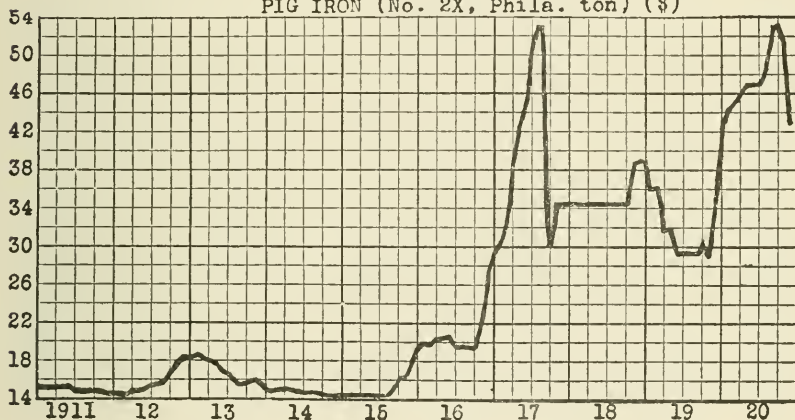
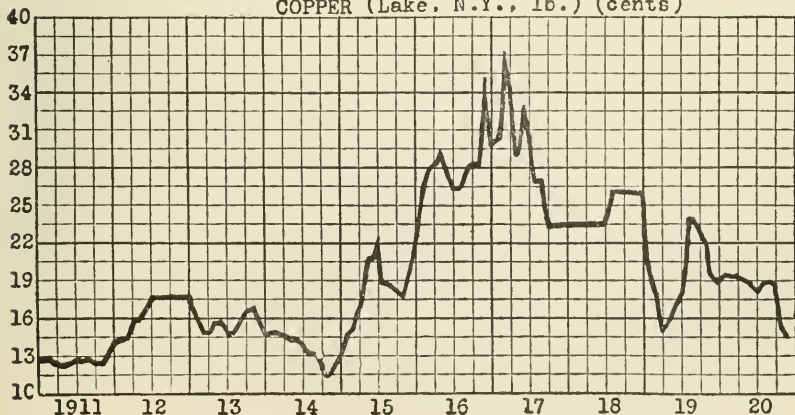


CHART XXXI.—TREND OF COPPER PRICES: 1910-1920.

COPPER (Lake. N.Y., lb.) (cents)



## CHAPTER XI

### BAROMETERS OF FINANCE

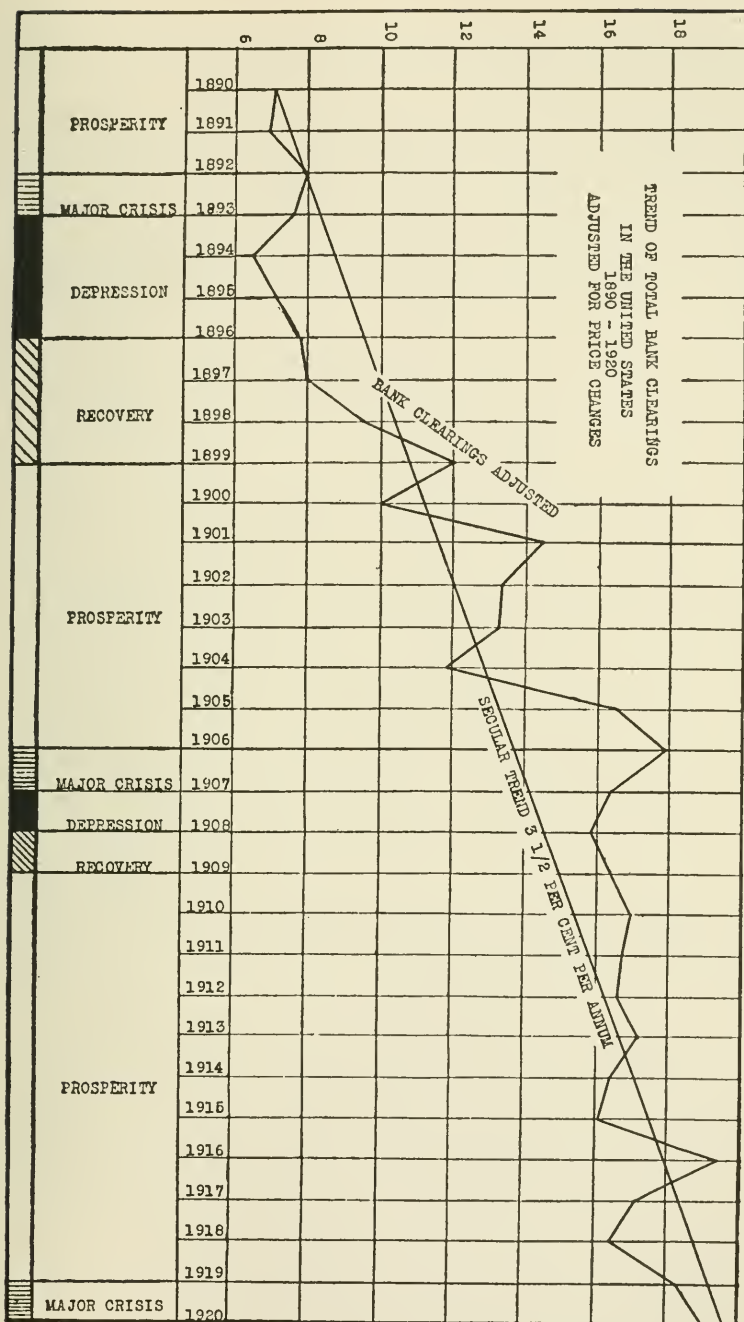
**Financial barometers.**—Financial barometers are five in number. The total bank clearings of a nation which transacts the largest part of its business transactions through the payment with checks—as is the case in the United States—afford a means of judging the relative commercial activity of the country at any given time. The bank statements disclose the condition of the financial institutions upon which the business world depends for credit—a prime necessity in modern business. Interest rates reflect the condition of the so-called money market, which is in reality a credit market. International gold movements are highly significant as a criterion both of credit conditions at home and general conditions abroad. The fiscal operations of the United States Government, in view of the enormous debt created during the war, have become an influencing factor of large importance upon general business conditions in this country.

#### BANK CLEARINGS

**Meaning of the term.**—About 85 per cent of the payments made in the United States are handled through the use of checks.<sup>1</sup> A certain share of these checks—not over 10 per cent—are deposited in the banks upon which drawn. The great majority, however, are deposited in other banks for collection. For mutual convenience, local banks in various localities have established clearing-houses to which they send all *local* checks. The total volume of checks cleared, i.e., passing through the clearing-house, indicates the relative business activity of the community. The aggregate for all clearing-

<sup>1</sup> "The ABC of the Federal Reserve System," E. W. Kemmerer, p. 9.

CHART XXXII.—BANK CLEARINGS IN THE UNITED STATES; 1890-1920.



houses would reflect the activity of the nation.<sup>2</sup> Local checks, i.e., checks deposited in the same city in which they were drawn, comprise about 75 per cent of the total checks.<sup>3</sup> Out-of-town checks, during the past few years, have been handled through the Federal Reserve Clearing System. The term bank clearings therefore includes all checks deposited in the same locality where drawn but not in the same bank upon which drawn, for the principal cities of the country. The total is approximately 65 per cent of all checks drawn in the country, and represents between 50 and 60 per cent of the total volume of business.

**Significance of New York City clearings.**—The custom has long prevailed, in using bank clearings as an index of business activity, to eliminate New York City clearings from the total. This was due to the effect of the speculative transactions on the New York Stock Exchange which gave an untrue bias to the clearings of the most important commercial center in the country. This objection, fortunately no longer obtains, at least not to the same extent as formerly. The operations of the Stock Exchange Clearing-House, which started on April 26, 1920, now cause the bulk of the stock exchange transactions to be without effect upon bank clearings.<sup>4</sup> Although the effect of speculative transactions is not entirely negligible, it no longer warrants the exclusion of New York City clearings in using bank clearings as a business barometer.<sup>5</sup>

**Barometric limitations upon bank clearings.**—The fact that bank clearings do not show the entire business of the country is not a handicap from a barometric viewpoint, as the volume represented is sufficiently large for the purpose. But more important objections arise. In the first place, a change in price levels affects the total bank clearings irrespec-

<sup>2</sup> No attempt is made to ascertain more often than once a year the total clearings for all clearing-houses of which 199 were in existence on September 30, 1920.—“Annual Report of the Comptroller of the Currency,” 1920, p. 280. The weekly report of *The Commercial and Financial Chronicle* (N. Y.) covered 178 cities in 1920. V. 112, No. 2899, p. 204.

<sup>3</sup> The monthly average clearings for the entire United States in 1920 approximated thirty-nine billion dollars; the monthly average of the Federal Reserve Clearing System—which handles out-of-town checks—in 1920 was about thirteen billions.

<sup>4</sup> In conversing with the author, the manager of the Stock Clearing Corporation stated that no definite figures had been compiled in this respect but that he estimated at least 60 per cent of the check payments formerly required no longer went through the bank clearings (June, 1921).

<sup>5</sup> *The Commercial and Financial Chronicle*, V. 112, No. 2899, p. 202.



tive of the volume of business being done. Total bank clearings in the United States in 1919 had to be at least as large again as in 1913 to represent an equal volume of business. And in the second place, to correct the bank clearings by applying a current price index number gives unsatisfactory results because current clearings often represent engagements entered upon under a former price level. Bank clearings do not reflect changes in prices until two to three months later because of the time required to fill contracts upon which the price is determined when the contract is made and not when the goods are delivered, and because of the 30 to 90 days credit which is the customary terms of sale.

**The trend of bank clearings.**—Subject to the limitations just stated, bank clearings undoubtedly reflect existing conditions in commerce. An increase in business activity means greater production which in turn signifies a larger number of purchases and sales, or, an increase in the volume of transactions. As transactions are customarily settled with check payments, the volume of bank clearings increases. The effect is converse when business activity diminishes. As is shown in Table No. 71, the bank clearings for the last quarter of 1915 amounted to practically 23 billion dollars in comparison with about 18 billions during the last quarter of 1914, and 20 billions during the last quarter of 1913. As prices were substantially the same during all three periods, the clearings accurately reflect the depression of 1914 and the recovery of 1915.<sup>6</sup>

**The Federal Reserve clearing system.**—The requirement that all member banks of the Federal Reserve System keep their legal reserves on deposit exclusively with the Federal Reserve banks entirely changed the method of collecting out-of-town checks which was formerly in vogue. After the banks in the large centers lost the deposits of the interior banks, they were no longer willing to act as collection agents and the Federal Reserve banks were obliged to provide a method which is now known as the Federal Reserve Clearing System. Table No. 72 shows the operations of the system monthly since June 15, 1919. Figures prior to that date are without barometric interest because of the smaller number of banks using the system.

<sup>6</sup> The October 1 index number of the Department of Labor for each of the three years was as follows: 1913, 101; 1914, 99; 1915, 101.—*Monthly Labor Reviews*, V. XII, No. 5, p. 38.

TABLE No. 71.—BANK CLEARINGS OUTSIDE NEW YORK CITY, 1911-1920\*

(000 omitted)

| Month        | 1911       | 1912       | 1913       | 1914       | 1915       | 1916        | 1917        | 1918        | 1919        | 1920        |
|--------------|------------|------------|------------|------------|------------|-------------|-------------|-------------|-------------|-------------|
| January..... | 5,963,447  | 6,339,569  | 6,895,099  | 6,826,299  | 6,195,741  | 7,743,292   | 10,513,139  | 11,819,506  | 14,567,494  | 18,395,416  |
| February.... | 4,974,752  | 5,655,969  | 5,819,961  | 5,626,553  | 5,430,346  | 7,129,512   | 8,835,386   | 9,998,002   | 11,613,895  | 15,086,449  |
| March.....   | 5,850,318  | 6,103,224  | 6,253,796  | 6,405,190  | 6,283,286  | 8,131,801   | 10,563,288  | 12,244,518  | 13,605,873  | 18,907,335  |
| 1st quarter  | 16,788,518 | 18,098,764 | 18,968,857 | 18,858,043 | 17,909,373 | 23,004,606  | 29,911,814  | 34,602,027  | 39,787,263  | 52,389,202  |
| April.....   | 5,433,794  | 6,213,715  | 6,233,821  | 6,351,244  | 6,201,418  | 7,692,625   | 10,360,027  | 12,391,579  | 13,277,687  | 17,785,625  |
| May.....     | 5,565,969  | 6,104,005  | 6,157,073  | 5,927,511  | 5,991,630  | 8,096,352   | 10,733,053  | 12,709,535  | 14,313,628  | 17,011,070  |
| June.....    | 5,616,887  | 5,729,871  | 5,955,898  | 6,101,888  | 6,096,718  | 8,044,195   | 10,635,269  | 12,457,015  | 14,500,780  | 17,851,946  |
| 2d quarter   | 16,616,651 | 18,047,592 | 18,346,793 | 18,380,644 | 18,289,767 | 28,833,172  | 31,728,350  | 37,558,130  | 42,092,096  | 52,648,644  |
| July.....    | 5,553,439  | 6,094,527  | 6,209,537  | 6,311,878  | 6,233,988  | 7,928,114   | 10,479,033  | 13,243,582  | 15,638,684  | 17,652,345  |
| August.....  | 6,278,444  | 5,797,664  | 5,629,238  | 5,350,958  | 5,733,787  | 7,985,078   | 10,413,908  | 13,197,733  | 15,181,764  | 16,473,488  |
| September... | 5,421,079  | 5,735,639  | 5,991,030  | 5,398,918  | 6,139,222  | 8,406,660   | 10,145,890  | 12,707,763  | 15,997,472  | 17,384,861  |
| 3d quarter   | 16,252,962 | 17,627,831 | 17,829,807 | 17,061,755 | 18,106,999 | 24,319,852  | 31,038,829  | 39,149,079  | 46,817,922  | 51,510,694  |
| October..... | 6,057,903  | 7,110,377  | 7,026,621  | 6,125,537  | 7,412,025  | 9,902,191   | 12,540,914  | 15,150,894  | 18,116,242  | 18,106,647  |
| November...  | 6,027,245  | 6,639,279  | 6,308,120  | 5,682,738  | 7,555,578  | 10,053,508  | 12,395,262  | 13,745,654  | 16,764,465  | 16,570,503  |
| December...  | 6,113,680  | 6,646,417  | 6,701,218  | 6,114,802  | 7,979,426  | 10,259,254  | 11,924,587  | 14,151,653  | 18,404,228  | 16,742,361  |
| 4th quarter  | 18,198,829 | 20,396,074 | 20,035,959 | 17,922,178 | 22,947,030 | 30,214,955  | 36,860,767  | 43,048,201  | 53,284,937  | 51,419,512  |
| Year.....    | 67,856,960 | 74,170,263 | 75,181,418 | 72,223,621 | 77,253,171 | 101,372,586 | 129,539,760 | 153,817,439 | 181,982,219 | 207,968,053 |

\* As compiled by *The Financial and Commercial Chronicle*.

TABLE No. 72.—OPERATIONS OF THE FEDERAL RESERVE CLEARING SYSTEM, 1919-1921\*

| <i>Month ended</i> |                             |
|--------------------|-----------------------------|
| 1919               | <i>Total checks cleared</i> |
| July 15 .....      | \$11,362,000,000            |
| August 15 .....    | 11,447,000,000              |
| September 15 ..... | 11,439,000,000              |
| October 15 .....   | 12,572,000,000              |
| November 15 .....  | 13,418,000,000              |
| December 15 .....  | 12,935,000,000              |
| 1920               |                             |
| January 15 .....   | 14,042,000,000              |
| February 14 .....  | 12,517,000,000              |
| March 15 .....     | 13,154,000,000              |
| April 15 .....     | 14,450,000,000              |
| May 15 .....       | 12,818,000,000              |
| June 15 .....      | 12,841,000,000              |
| July 15 .....      | 13,616,000,000              |
| August 15 .....    | 12,301,000,000              |
| September 15 ..... | 12,878,000,000              |
| October 15 .....   | 13,674,000,000              |
| November 15 .....  | 13,088,000,000              |
| December 15 .....  | 12,090,000,000              |
| 1921               |                             |
| January 15 .....   | 12,024,000,000              |
| February 15 .....  | 9,899,000,000               |
| March 15 .....     | 9,417,000,000               |
| April 15 .....     | 10,724,000,000              |
| May 15 .....       | 9,319,000,000               |
| June 15 .....      | 9,852,000,000               |
| July 15 .....      | 9,762,000,000               |
| August 15 .....    | 9,188,000,000               |

\* Compiled from "Federal Reserve Bulletin."

A combination of the total clearings at the clearing-houses with the Federal Reserve Clearing System, would cover practically all local and out-of-town checks. Unfortunately, the Federal Reserve system has a fiscal month ending on the 15th in contrast to the practice of combining the clearing-house returns weekly.

**Bank clearings as a business barometer.**—Bank clearings are not so good a barometer of business as is generally believed. Barometric limitations are caused by changes in price levels, and the time intervening between the making of a business transaction and the date of payment. But of chief importance is the tendency of clearings to follow after the trend in business. Bank clearings show accurately how business has been in the immediate past, but offer little assistance in determining how it will be in the immediate future.

## BANK STATEMENTS

**Statements according to classification.**—The bank statements which are of chief barometric significance are: (1) the weekly statement of the combined Federal Reserve banks; (2) the weekly statement of the reporting member banks of the Federal Reserve system; and (3) the bi-monthly statement of condition of the combined national banks. The total number of banks in the United States on June 30, 1920, which reported to the Comptroller of the Currency was 30,151.<sup>7</sup> Of this number 12 were Federal Reserve banks, 18,195 were State banks, 620 mutual savings banks, 1,087 stock savings banks, 1,408 loan and trust companies, 799 private banks, and 8,030 were national banks. The Federal Reserve system, in addition to the 12 Federal Reserve banks, includes approximately 10,000 of the above-mentioned banks.<sup>8</sup>

**Relative importance of different classes.**—The relative importance of the principal classes of banks is shown in Table No. 73. The loans and investments of the reporting member banks of the Federal Reserve system are about the same as for all national banks, and are about 40 per cent of the total for the country.<sup>9</sup> The Federal Reserve system embraces about 60 per cent of the banking power of the country.

**The weekly Federal Reserve statement.**—The weekly Federal Reserve statement reflects the condition of the Federal Reserve system which comprises about 60 per cent of the banking facilities in the United States.

At the close of business on Wednesday of each week, the twelve reserve banks telegraph to Washington a statement of resources and liabilities. A consolidated statement is then prepared and appears in the newspapers on Friday, two days later, as is shown in Table No. 74. The significant items in the statement are shown in the table in distinctive type, a practice which unfortunately is not followed by the Board or by the newspapers. The items on the statement have been num-

<sup>7</sup> "Annual Report of the Comptroller of the Currency," 1920, p. 252.

<sup>8</sup> All National banks must, and other banks may, be members of Federal Reserve system. The exact number of member banks on March 31, 1921, was 9,715. "Federal Reserve Bulletin," V. 7, No. 5, p. 614.

<sup>9</sup> About 800 of the larger member banks of the Federal Reserve system each week report to the Federal Reserve Board. The reporting member banks include trust companies as well as national banks, and it is a coincidence that the total for the reporting member banks approximates the total for all national banks.

TABLE No. 73.—BANKING PROGRESS, 1914-1920  
(in millions of dollars)

| Year.     | (1)<br>Price<br>index. | (2)<br>Gold in<br>U. S. | (3)<br>Money in<br>circula-<br>tion. | (4)<br>Fed. Res.<br>notes<br>out-<br>standing. | Reporting member<br>banks (5). |                  | All national<br>banks (6). |                                  | All banks (7)         |                  |
|-----------|------------------------|-------------------------|--------------------------------------|------------------------------------------------|--------------------------------|------------------|----------------------------|----------------------------------|-----------------------|------------------|
|           |                        |                         |                                      |                                                | Loans<br>and<br>inst.          | Net<br>deposits. | Loans<br>and<br>inst.      | Deposits<br>subject<br>to check. | Loans<br>and<br>inst. | Net<br>deposits. |
| 1920..... | 269                    | \$2,687                 | \$5,380                              | \$3,121                                        | \$16,925                       | \$11,486         | \$16,957                   | \$9,577                          | \$42,752              | \$37,488         |
| 1919..... | 207                    | 3,095                   | 4,842                                | 2,498                                          | 14,676                         | 10,388           | 15,924                     | 8,479                            | 37,624                | 32,499           |
| 1918..... | 193                    | 3,075                   | 4,367                                | 1,672                                          | 12,480                         | 9,103            | 13,533                     | 7,161                            | 32,316                | 26,769           |
| 1917..... | 185                    | 3,019                   | 3,945                                | 489                                            | .....                          | .....            | 11,786                     | 6,560                            | 28,645                | 24,891           |
| 1916..... | 119                    | 2,449                   | 4,024                                | 154                                            | .....                          | .....            | 9,983                      | 5,577                            | 24,646                | 21,574           |
| 1915..... | 100                    | 1,985                   | 3,569                                | 71                                             | .....                          | .....            | 8,679                      | 4,517                            | 21,640                | 18,420           |
| 1914..... | 99                     | 1,890                   | 3,419                                | .....                                          | .....                          | .....            | 8,356                      | 5,077                            | 20,924                | 17,966           |

(1) United States Department of Labor Monthly Index Number of Wholesale Prices.  
(2) From Monthly Circulation Statement of the Treasury Department.

(3) Ditto.

(4) Ditto.

(5) From Federal Reserve Bulletin.

(6) From Annual Reports of the Comptroller of the Currency.

(7) Ditto.



bered for convenience in reference. Of major interest are: (7) total cash reserves; (11) total bills discounted; (23) member banks-reserve account; (26) Federal Reserve notes in circulation; and (30) reserve ratio.

**Cash reserves.**—The Federal Reserve banks are required to maintain a reserve of at least 40 per cent in gold against Federal Reserve notes in circulation, and of at least 35 per cent in lawful money against deposit liabilities. The amount of cash reserves therefore imposes a limitation upon the credit availability in the Federal Reserve system, a point which will presently receive further elucidation.

It will be noted that practically the entire reserve is in gold. Total gold reserves of \$2,445,568,000 on June 15, 1921 marked a new high record for the Federal Reserve banks as may be seen from Table No. 75 which shows the total gold holdings monthly from the organization of the banks. In slightly over one year—from May, 1920 to June, 1921—the gold holdings of the reserve banks increased over \$500,000,000. Under existing legislation in the United States, one dollar in gold serves as a basis for about \$28 in bank credit.<sup>10</sup> As the amount of gold in the Federal Reserve system measures the maximum loaning power of the banks, substantial increases and decreases such as have been experienced since the beginning of the World War exert large influence upon the condition of credit throughout the country.

**Bills discounted.**—One of the principal reasons for the formation of the Federal Reserve banks was to provide a means of rediscounting commercial paper. Member banks whose position otherwise would make it inadvisable to grant further credits to depositors may avail themselves of an opportunity to rediscount at the reserve banks, some of the loans they are already carrying. As the rediscount privilege of the reserve banks is supposed to be used only in emergencies, the volume of discounts shown in the weekly statement reflects the loaning condition of the system as a whole. Previous to 1921, this was not the case because of the policy of the Board in keeping the discount rate under the market rate of interest.

**Member banks' reserve account.**—As all member banks are required to keep on deposit with the reserve banks a cash

<sup>10</sup> Member banks of the Federal Reserve system are required to keep a reserve which averages 10 per cent of total deposits, with the reserve banks which in turn keep a reserve of 35 per cent of the 10 per cent, or 3½ per cent.

TABLE No. 74.—STATEMENT OF THE CONDITION OF THE COMBINED FEDERAL RESERVE BANKS ON JUNE 15, 1921\*

| RESOURCES                                               |                 |
|---------------------------------------------------------|-----------------|
| 1. Gold and gold certificates.....                      | \$311,017,000   |
| 2. Gold settlement fund.....                            | 456,211,000     |
| Total gold held by banks.....                           | \$767,228,000   |
| 3. Gold with Federal Reserve agents.....                | 1,550,817,000   |
| 4. Gold redemption fund.....                            | 127,523,000     |
| 5. Total gold reserves.....                             | \$2,445,568,000 |
| 6. Legal tender notes, silver, etc.....                 | 170,056,000     |
| 7. Total cash reserves.....                             | \$2,615,624,000 |
| 8. Bills discounted:                                    |                 |
| 9. Secured by United States Government obligations..... | \$664,296,000   |
| 10. All other .....                                     | 1,043,383,000   |
| 11. Total bills discounted.....                         | \$1,707,679,000 |
| 12. Bills bought in open market.....                    | 53,200,000      |
| 13. Total bills on hand.....                            | \$1,760,879,000 |
| 14. United States Government obligations owned.....     | 557,954,000     |
| 15. Total earning assets .....                          | \$2,318,833,000 |
| 16. Uncollected items .....                             | \$722,766,000   |
| 17. All other resources.....                            | \$49,956,000    |
| Total resources (7-15-16-17).....                       | \$5,707,190,000 |
| LIABILITIES                                             |                 |
| 18. Capital paid in.....                                | \$102,156,000   |
| 19. Surplus .....                                       | \$202,036,000   |
| 20. Reserved for franchise tax.....                     | \$39,057,000    |
| 21. Deposits:                                           |                 |
| 22. Government .....                                    | \$14,597,000    |
| 23. Member banks—reserve account.....                   | 1,866,455,000   |
| 24. All other .....                                     | 48,175,000      |
| 25. Total deposits .....                                | \$1,929,227,000 |
| 26. Federal Reserve notes in actual circulation.....    | \$2,674,435,000 |
| 27. Federal Reserve banknotes—net liability.....        | \$135,050,000   |
| 28. Deferred availability items.....                    | \$594,207,000   |
| 29. All other liabilities.....                          | \$31,011,000    |
| Total liabilities (18-19-20-25 to 29).....              | \$5,707,179,000 |

\* Compiled from *The New York Times*, June 17, 1921.

|                                                                                                                                     | <i>Per cent</i> |
|-------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| 30. Ratio of total reserves to deposit and Federal Reserve note liabilities combined .....                                          | 56.8            |
| 31. Ratio of gold reserves to Federal Reserve notes in circulation after setting aside 35 per cent against deposit liabilities..... | 72.6            |
| 32. Ratio of reserves against deposits and notes in individual districts:                                                           |                 |

|                    | <i>Per cent</i> |                     | <i>Per cent</i> |
|--------------------|-----------------|---------------------|-----------------|
| Boston .....       | 68.8            | Chicago .....       | 54.9            |
| New York .....     | 60.6            | St. Louis .....     | 52.5            |
| Philadelphia ..... | 54.1            | Minneapolis .....   | 40.3            |
| Cleveland .....    | 61.8            | Kansas City .....   | 49.2            |
| Richmond .....     | 43.7            | Dallas .....        | 38.5            |
| Atlanta .....      | 46.3            | San Francisco ..... | 56.4            |

\* Compiled from the *New York Times*, June 17, 1921.

reserve which averages about 10 per cent of deposits, the amount in this item approximates the same percentage of the individual deposits at the reserve banks. As individual deposits are about equal to the amount of loans and discounts, and as the amount of loans and discounts in the reserve banks averages about 60 per cent of the total for the country, the total in the reserve account of the member banks on the weekly Federal Reserve statement is about 6 per cent of the total loans outstanding in the entire country.

**Federal Reserve notes in circulation.**—A second important object in the organization of the reserve banks was to provide an elastic currency which would expand when the demands of business so required and would contract when the need no longer existed. Federal Reserve notes comprise this elastic currency. They are issued by the reserve banks only upon the request of the business community, i.e., when increased demands for credit cause member banks to seek rediscount accommodation at the reserve banks, and are automatically retired when they return to the reserve banks. As is shown in Table No. 76, the volume of Federal Reserve Notes in circulation on June 1, 1921, exceeded all other forms of currency combined.

In view of the elasticity of the Federal Reserve note circulation, the relative volume of these notes which is outstanding at any given time is a fair criterion of current conditions. An upward trend in the volume from week to week reflects greater business activity, whereas a downward trend indicates that activity is not so great. Statistics of Federal Re-

CHART XXXIII.—FEDERAL RESERVE NOTES IN CIRCULATION: 1919-1921.

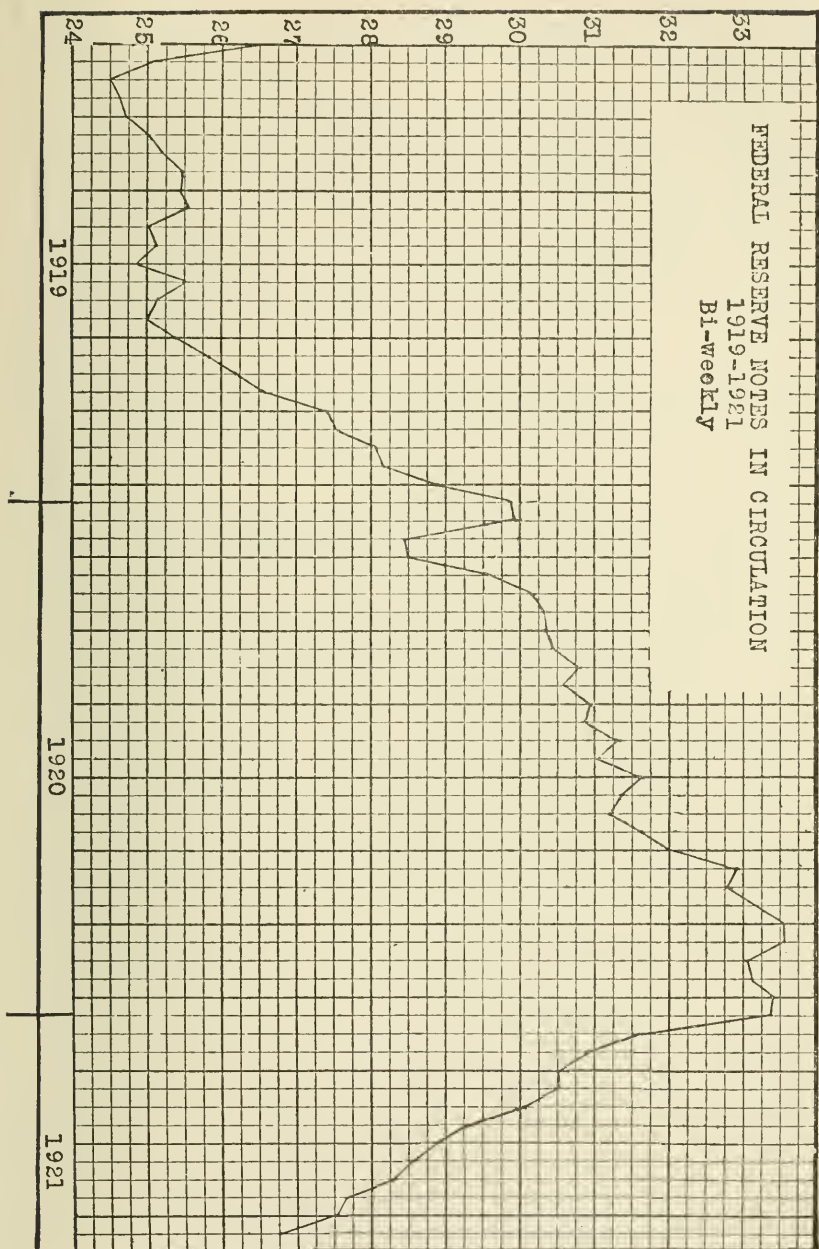


TABLE No. 75.—GOLD HOLDINGS OF THE COMBINED FEDERAL RESERVE BANKS, 1914-1920\*

(in thousands of dollars)

(Figures for week ending nearest first of month)

| <i>Month</i>   | <i>1914</i> | <i>1915</i> | <i>1916</i> | <i>1917</i> | <i>1918</i> | <i>1919</i> | <i>1920</i> |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| January.....   |             | 229,069     | 344,963     | 453,713     | 1,687,720   | 2,092,694   | 2,062,615   |
| February....   |             | 235,905     | 342,004     | 521,760     | 1,717,022   | 2,112,106   | 2,012,656   |
| March.....     |             | 248,909     | 338,250     | 518,541     | 1,777,329   | 2,122,998   | 1,966,836   |
| 3 mos. av..... |             | 237,961     | 341,739     | 498,004     | 1,727,357   | 2,109,266   | 2,014,035   |
| April.....     |             | 239,176     | 335,240     | 577,378     | 1,815,704   | 2,150,950   | 1,950,259   |
| May.....       |             | 238,228     | 306,597     | 557,697     | 1,859,940   | 2,166,618   | 1,936,720   |
| June.....      |             | 243,640     | 346,377     | 489,834     | 1,917,826   | 2,187,743   | 1,960,853   |
| 3 mos. av..... |             | 240,348     | 329,405     | 541,636     | 1,864,490   | 2,168,437   | 1,949,277   |
| July.....      |             | 264,288     | 376,758     | 1,294,512   | 1,949,021   | 2,128,946   | 1,971,696   |
| August.....    |             | 266,192     | 365,163     | 1,367,673   | 1,980,896   | 2,088,475   | 1,977,704   |
| September...   |             | 268,411     | 351,771     | 1,353,498   | 2,013,794   | 2,066,788   | 1,962,310   |
| 3 mos. av..... |             | 266,297     | 364,564     | 1,338,561   | 1,981,237   | 2,094,736   | 1,970,570   |
| October.....   |             | 283,645     | 387,195     | 1,408,470   | 2,025,434   | 2,135,282   | 2,003,072   |
| November.....  |             | 281,406     | 407,192     | 1,546,075   | 2,032,229   | 2,138,000   | 2,003,320   |
| December.....  | 227,840     | 325,181     | 439,174     | 1,621,725   | 2,065,213   | 2,093,641   | 2,022,675   |
| 3 mos. av..... |             | 296,744     | 411,187     | 1,525,423   | 2,047,625   | 2,122,307   | 2,009,689   |
| Yearly av..... |             | 260,337     | 361,723     | 955,906     | 1,905,177   | 2,123,687   | 1,985,893   |

\* From "Prentice-Hall Business Information Service."



TABLE No. 76.—MONEY IN CIRCULATION IN THE UNITED STATES  
ON JUNE 1, 1921\*

| <i>Circulating medium</i>                  | <i>Amount</i>   |
|--------------------------------------------|-----------------|
| Gold and gold certificates.....            | \$885,732,861   |
| Silver and silver certificates.....        | 524,207,249     |
| United States Government notes.....        | 336,002,306     |
| Bank notes .....                           | 891,281,092     |
| <hr/>                                      |                 |
| Total excluding Federal Reserve notes..... | \$2,637,223,508 |
| Federal Reserve notes.....                 | 2,782,725,207   |
| <hr/>                                      |                 |
| Grand total .....                          | \$5,419,948,715 |

\* From "Circulation Statement," June 1, 1921.

serve note circulation prior to 1919 are without significance, as the amount showed a continual upward movement from the opening of the system in 1914. As is shown in Table No. 77, the volume of circulation decreased materially during the early months of 1919 which reflected the short-lived post-armistice depression. From April, 1919, to December, 1920, the increase was almost unbroken. On December 23, 1920, the high record of \$3,404,931,000 was reached. The first half of 1921 witnessed a substantial decrease as the volume of \$2,674,435,000 in Table No. 74 attests.

**Reserve ratio.**—The percentage which total cash reserves (7) is of the sum of total deposits (25) and reserve notes (26) is known as the reserve ratio (30). It is obvious that any change in the reserves, discounts, deposits, or notes, of the reserve banks affects the reserve ratio. For this reason, the ratio serves as an index number for each statement, and it is possible to observe the composite effect of all influencing factors from week to week merely through watching the reserve percentage.

A single percentage is used for convenience only. From a legal viewpoint, as has been stated, two separate reserves are required, one against notes and another against deposits. The legal minimum is a varying percentage between 35 and 40 depending upon the relative amount of note and deposit liabilities outstanding.

As a matter of practice, the minimum reserve ratio—which would indicate a satisfactory condition of credit—is believed to be about 60 per cent. Below that is unsatisfactory, 50 per cent is the danger mark, and 40 per cent the approximate legal limit. The ratio of 56.8 per cent on June 15, 1921,

TABLE No. 77.—FEDERAL RESERVE NOTES IN CIRCULATION 1919-1921  
(in millions of dollars, weekly figures)

| <i>Month</i>    | <i>1919</i> | <i>1920</i> | <i>1921</i> |
|-----------------|-------------|-------------|-------------|
| January .....   | 2,647       | 2,998       | 3,344       |
|                 | 2,590       | 2,914       | 3,207       |
|                 | 2,513       | 2,849       | 3,159       |
|                 | 2,466       | 2,844       | 3,115       |
|                 | 2,450       | 2,850       | 3,090       |
| February .....  | 2,454       | 2,891       | 3,075       |
|                 | 2,468       | 2,959       | 3,050       |
|                 | 2,466       | 2,977       | 3,037       |
|                 | 2,472       | 3,019       | 3,051       |
| March .....     | 2,488       | 3,030       | 3,042       |
|                 | 2,503       | 3,039       | 3,005       |
|                 | 2,510       | 3,047       | 2,962       |
|                 | 2,521       | 3,048       | 2,930       |
| April .....     | 2,547       | 3,077       | 2,908       |
|                 | 2,548       | 3,080       | 2,893       |
|                 | 2,543       | 3,073       | 2,868       |
|                 | 2,549       | 3,068       | 2,856       |
| May .....       | 2,549       | 3,074       | 2,830       |
|                 | 2,556       | 3,092       | 2,828       |
|                 | 2,532       | 3,083       | 2,804       |
|                 | 2,504       | 3,085       | 2,767       |
|                 | 2,519       | 3,107       | 2,734       |
| June .....      | 2,513       | 3,127       | 2,751       |
|                 | 2,499       | 3,112       | 2,700       |
|                 | 2,488       | 3,104       | 2,674       |
|                 | 2,499       | 3,116       | 2,639       |
| July .....      | 2,552       | 3,168       | 2,634       |
|                 | 2,538       | 3,180       | 2,671       |
|                 | 2,512       | 3,135       | 2,603       |
|                 | 2,504       | 3,118       | 2,564       |
|                 | 2,506       | 3,120       | 2,537       |
| August .....    | 2,532       | 3,141       | 2,536       |
|                 | 2,540       | 3,169       | 2,520       |
|                 | 2,553       | 3,174       | 2,503       |
|                 | 2,580       | 3,203       | 2,485       |
|                 | 2,611       | 3,243       | 2,481       |
| September ..... | 2,621       | 3,295       | 2,517       |
|                 | 2,621       | 3,289       | 2,491       |
|                 | 2,655       | 3,279       | 2,474       |
|                 | 2,708       | 3,304       | 2,457       |
| October .....   | 2,741       | 3,322       | 2,482       |
|                 | 2,752       | 3,353       | 2,476       |
|                 | 2,753       | 3,356       | 2,440       |
|                 | 2,752       | 3,351       | .....       |
|                 | 2,806       | 3,354       | .....       |
| November .....  | 2,808       | 3,328       | .....       |
|                 | 2,817       | 3,307       | .....       |
|                 | 2,852       | 3,325       | .....       |
|                 | 2,881       | 3,312       | .....       |
| December .....  | 2,907       | 3,311       | .....       |
|                 | 2,988       | 3,344       | .....       |
|                 | 3,057       | 3,404       | .....       |

compares with the low record of 42.2 per cent reached on May 14, 1920.<sup>11</sup>

**Significance of changes in reserve ratio.**—A change in the reserve ratio can come as a result of changes in one or more of three items, namely, cash reserves, loans outstanding, and notes outstanding. As the volume of loans and notes depends upon credit conditions, the factors are really two in number: cash reserves and outstanding credit. A decline in the reserve ratio signifies either a decrease in cash reserves, or an increase in credit outstanding at the member banks; an increase in the ratio may mean either a gain in cash reserves, or a decline in outstanding credit. When the ratio is above 60 per cent, a decrease is a favorable sign; when the ratio is below 60 per cent, an increase is more desirable.

The gain in the reserve ratio from 44.5 per cent on June 18, 1920, to 56.8 per cent on June 15, 1921, was due chiefly to a contemporary gain in cash reserves from \$2,100,900,000 to \$2,615,624,000. In other words, the improvement in the ratio did not signify a corresponding contraction in outstanding credits.<sup>12</sup>

**District reserve ratios.**—A recent innovation of the Federal Reserve Board is that of supplying the reserve ratios for the separate districts as is shown in item No. 32 of Table No. 74. Although the ratio for the combined banks was 56.8 per cent, the individual ratios show a wide variance from 38.5 per cent at Dallas to 68.8 per cent at Boston. The individual ratios are invaluable criteria of credit conditions in the various sections of the country. On the June 15, 1921 showing, the agricultural districts—notably Dallas, Minneapolis, Richmond, and Atlanta—were still feeling the effects of the credit difficulties encountered in moving the

<sup>11</sup> A slightly different method of computing the ratio was employed in 1920; under the present method, the ratio on May 14, 1920, would have been 40.5 per cent.

<sup>12</sup> A different method of computation causes confusion in comparing the reserve ratio of the Bank of England with that of the Federal Reserve banks. The Bank of England is divided into two departments, one of banking and one of note issue; the Federal Reserve banks conduct both functions without the departmental division. In London, a special reserve in gold—of approximately 100 per cent—is set up against bank notes, and the remainder of the cash applies against the deposit liabilities. On June 15, 1921—when the Federal Reserve ratio was 56.8 per cent—the reserve of the Bank of England was reported to be 13.14 per cent. Had the ratio been computed according to the American plan it would have been 53.6 per cent.

TABLE No. 78.—RATIO OF CASH RESERVES TO FEDERAL RESERVE NOTES IN CIRCULATION AND DEPOSIT LIABILITIES FOR THE FEDERAL RESERVE SYSTEM, 1914-1920\*

(Figures for week ending nearest first of month)

| <i>Month</i>   | <i>1914</i> | <i>1915</i> | <i>1916</i> | <i>1917</i> | <i>1918</i> | <i>1919</i> | <i>1920</i> |
|----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| January.....   |             | 98.4        | 87.9        | 70.9        | 64.2        | 51.2        | 43.7        |
| February.....  |             | 93.6        | 80.4        | 77.8        | 65.2        | 53.0        | 44.5        |
| March.....     |             | 96.7        | 79.1        | 75.4        | 65.8        | 51.3        | 42.5        |
| 3 mos. av..... |             | 96.2        | 82.4        | 74.7        | 65.0        | 51.8        | 43.5        |
| April.....     |             | 90.3        | 76.0        | 81.2        | 62.7        | 52.2        | 42.9        |
| May.....       |             | 89.3        | 70.2        | 72.1        | 62.4        | 51.7        | 42.4        |
| June.....      |             | 93.3        | 71.7        | 65.8        | 62.0        | 51.8        | 42.5        |
| 3 mos. av..... |             | 90.9        | 72.6        | 73.0        | 62.3        | 51.9        | 42.6        |
| July.....      |             | 96.1        | 73.8        | 73.1        | 61.7        | 50.8        | 42.8        |
| August.....    |             | 91.8        | 70.0        | 79.1        | 58.7        | 50.5        | 44.2        |
| September..... |             | 89.3        | 71.0        | 79.9        | 56.4        | 50.7        | 42.5        |
| 3 mos. av..... |             | 92.4        | 71.6        | 77.3        | 58.9        | 50.6        | 43.1        |
| October.....   |             | 87.5        | 72.8        | 74.5        | 51.5        | 49.7        | 43.7        |
| November.....  |             | 87.5        | 74.1        | 68.6        | 50.4        | 47.9        | 43.1        |
| December.....  | 104.0       | 89.0        | 73.1        | 62.8        | 50.0        | 45.5        | 44.1        |
| 3 mos. av..... |             | 88.0        | 73.3        | 68.6        | 50.6        | 47.7        | 43.6        |
| Yearly av..... |             | 91.9        | 75.0        | 73.4        | 59.2        | 50.5        | 43.2        |

\* From "Prentice-Hall Business Information Service."

1920 crops. On the other hand, the relatively high ratios in the industrial centers—Boston, Cleveland, and New York—reflected the industrial depression which was then present. The district reserve ratios, however, are subject to the influence of interdistrict borrowing which tends to help one district at the expense of another. At one time in 1920 the Dallas ratio was really under 30 per cent, but through the transfer of loans to other Reserve banks, the Dallas ratio was reported as about 40 per cent.

**Panics and the Federal Reserve System.**—Current belief that panics as a recurring feature of American business have been eliminated through the operations of the Federal Reserve system is scarcely founded upon fact. Panics are psychological phenomena and no country can ever be panic-proof until the minds of men substantially change. Alternate stages of optimism and pessimism cause men to be filled with confidence at one moment and with apprehension the next. Neither the Federal Reserve system nor any other bulwark has power to check this tendency.

Ample power is given to the Federal Reserve banks to prevent a financial crisis which might arise from a shortage of money, as happened in 1907. Federal Reserve notes can be issued without limit, as in times of emergency, the minimum gold reserve requirement may be suspended. In this manner, the fear that money may at times be unobtainable has been obviated—an accomplishment of far-reaching importance.

The Federal Reserve banks have power to relieve a large share of the mental anxiety that has often accompanied the period of transition from prosperity to depression. Through control over credit operations,—none the less potent because it is backed by the power of persuasion only—business activity may be regulated to no small extent, as was illustrated throughout 1920 when bank loans were arbitrarily restricted according to the purpose for which the borrower desired the funds. Loans for speculative purposes, or to withhold commodities from the market, could be obtained only with extreme difficulty.

But the reserve banks have not the power to prevent the alternate periods of prosperity and depression which will continue to follow each other while the present organization of commercial society exists. The operation of the reserve



banks will mitigate certain of the effects, but the general cyclical trend of business conditions will remain.

Reporting member bank statements.—As has been previously stated, about 800 of the leading member banks of the Federal Reserve system—comprising about 70 per cent of the system from the standpoint of resources—make weekly reports to the Federal Reserve Board.<sup>13</sup> Although the state-

TABLE No. 79.—REPORTING MEMBER BANKS, FEDERAL RESERVE SYSTEM, CONDITION, JUNE 8, 1921\*

|                                                                                                 |              |
|-------------------------------------------------------------------------------------------------|--------------|
| Number of reporting banks.....                                                                  | 818          |
| Loans and discounts, including bills rediscounted with Federal Reserve banks:                   |              |
| Secured by United States Government obligations.....                                            | \$665,729    |
| Secured by stocks and bonds.....                                                                | 3,017,433    |
| All other .....                                                                                 | 8,194,531    |
| Total loans and discounts .....                                                                 | \$11,877,693 |
| United States securities owned.....                                                             | 1,212,368    |
| Other securities owned.....                                                                     | 2,088,765    |
| Total loans and investments, including rediscounts....                                          | \$15,178,826 |
| Reserve balance with Federal Reserve banks.....                                                 | 1,281,294    |
| Cash in vault.....                                                                              | 336,725      |
| Net demand deposits.....                                                                        | 10,212,589   |
| Time deposits.....                                                                              | 2,931,310    |
| Government deposits.....                                                                        | 25,526       |
| Discounts with Federal Reserve banks:                                                           |              |
| Secured by United States Government obligations.....                                            | 389,552      |
| All other .....                                                                                 | 2,311        |
| Rediscounts with Federal Reserve banks:                                                         |              |
| Secured by United States Government obligations.....                                            | 126,671      |
| All other .....                                                                                 | 839,583      |
| Ratio of discounts and rediscounts at Federal Reserve banks to total loans and investments..... | 8.9%         |

\* Compiled from "Official Statement No. 2059," Federal Reserve Board, June 16, 1921.

ment of the condition of the reporting member banks is issued weekly simultaneously with that of the reserve banks, the period covered differs. The reserve statement shows the condition on the preceding Wednesday; the member statement shows the condition on the second preceding Wednesday. As the reporting member banks comprise all important banks in the country, the weekly statement permits

<sup>13</sup> Their resources are estimated to be between 65 and 70 per cent of the resources of all member banks and between 35 and 40 per cent of all commercial banks in the country.—W. P. G. Harding, Governor, Federal Reserve Board, in address before Chamber of Commerce, Cleveland, Ohio, September 16, 1920.

a closer analysis to be made of the condition of the individual banks than is provided by the reserve bank statement. It is a distinct improvement in this respect over the former method of securing this information bi-monthly, and even then one to two months late, from the Comptroller's call for national bank reports.

**National bank statements.**—As is indicated in the preceding paragraphs, the bi-monthly reports on the condition of the national banks no longer hold the same interest as obtained before the weekly Federal Reserve statements. Practically the same information is now obtainable weekly. Six times each year the national banks are required to report to the Comptroller of the Currency. The individual reports are combined, and the totals made public. The two significant items are (1) the total loans and discounts and (2) the total individual deposits. Table No. 80 shows the amount in each of these items in the various calls from 1912 to 1920. It is significant to note that loans and discounts did not reach their maximum until the early fall of 1920 despite the fact that prices started to fall in early spring and industrial conditions were already becoming unfavorable. "Frozen" credit caused by railroad traffic congestions in the summer and the withholding policy of the agriculturists in the fall caused the volume of outstanding credit to remain undiminished until the very end of the year.

**Bank statements as business barometers.**—Bank statements are of great importance in business barometric work. Their chief significance is as a criterion of existing conditions of credit. Practically every business transaction in the country has some element of credit involved. When a firm sells on credit, the firm ordinarily passes on to its customer the credit it received at its bank. If bank credit must be curtailed at any time, then business credits must also be reduced. And as adequate credits are a prime necessity in business, any reduction in credit availability adversely affects commerce.

In a period of business activity the demand for credit increases. This is reflected almost immediately in the loans of the banks, in the discounts at the reserve banks, in the gain in Federal Reserve notes in circulation, and most likely, in a decrease in the reserve ratio for the combined reserve banks. As business activity grows, the demand for credit in-

TABLE No. 80.—CONDITION OF THE NATIONAL BANKS OF THE UNITED STATES AT COMPTROLLER'S BI-MONTHLY CALLS, 1912-1920\*

| <i>Date of call</i> | <i>Loans and discounts</i> | <i>Individual deposits</i> |
|---------------------|----------------------------|----------------------------|
| 1920                |                            |                            |
| December 29 .....   | \$12,095,295,000           | \$13,137,012,000           |
| November 15 .....   | 12,311,514,000             | 13,719,996,000             |
| September 8 .....   | 12,415,762,000             | 13,595,934,000             |
| June 30 .....       | 12,396,900,000             | 13,705,325,000             |
| May 4 .....         | 12,288,582,000             | 13,533,908,000             |
| February 28 .....   | 11,994,523,000             | 13,303,367,000             |
| 1919                |                            |                            |
| December 31 .....   | 11,786,227,000             | 13,464,704,000             |
| November 17 .....   | 11,560,242,000             | 13,314,015,000             |
| September 12 .....  | 11,085,462,000             | 12,672,567,000             |
| June 30 .....       | 10,574,838,000             | 11,891,132,000             |
| May 12 .....        | 9,904,821,000              | 11,832,779,000             |
| March 4 .....       | 9,691,187,000              | 11,211,050,000             |
| 1918                |                            |                            |
| December 31 .....   | 9,918,294,000              | 11,934,445,000             |
| November 1 .....    | 10,096,940,000             | 10,913,330,000             |
| August 31 .....     | 9,493,666,000              | 10,493,140,000             |
| June 29 .....       | 9,620,402,000              | 10,181,739,000             |
| May 10 .....        | 9,260,041,000              | 10,439,433,000             |
| March 4 .....       | 9,139,225,000              | 10,454,825,000             |
| 1917                |                            |                            |
| December 31 .....   | 9,800,836,000              | 10,734,677,000             |
| November 20 .....   | 9,535,527,000              | 10,338,813,000             |
| September 11 .....  | 9,055,248,000              | 9,975,352,000              |
| June 20 .....       | 8,818,312,000              | 9,521,648,000              |
| May 1 .....         | 8,751,679,000              | 9,696,459,000              |
| March 5 .....       | 8,712,862,000              | 6,273,760,000              |
| 1916                |                            |                            |
| December 27 .....   | 8,340,626,000              | 9,003,042,000              |
| November 17 .....   | 8,345,784,000              | 9,139,134,000              |
| September 12 .....  | 7,859,837,000              | 8,445,649,000              |
| June 30 .....       | 7,679,167,000              | 8,143,048,000              |
| May 1 .....         | 7,606,428,000              | 8,136,018,000              |
| March 7 .....       | 7,490,011,000              | 7,716,379,000              |
| 1915                |                            |                            |
| December 31 .....   | 7,357,732,000              | 7,641,259,000              |
| November 10 .....   | 7,233,929,000              | 7,446,175,237              |
| September 2 .....   | 6,756,680,004              | 6,762,182,713              |
| June 23 .....       | 6,659,971,463              | 6,611,281,821              |
| May 1 .....         | 6,643,887,951              | 6,661,581,353              |
| March 4 .....       | 6,499,964,605              | 6,348,890,100              |
| 1914                |                            |                            |
| December 31 .....   | 6,347,636,510              | 6,346,362,249              |
| September 12 .....  | 6,400,767,386              | 6,139,081,279              |
| June 30 .....       | 6,430,069,214              | 6,268,692,429              |
| March 4 .....       | 6,357,535,898              | 6,111,328,457              |
| January 13 .....    | 6,175,404,961              | 6,072,064,752              |

\* From *New York Evening Post*, December 31, 1920, p. 4F.

TABLE No. 80.—CONDITION OF THE NATIONAL BANKS OF THE UNITED STATES AT COMPTROLLER'S BI-MONTHLY CALLS, 1912-1920\*

| <i>Date of call</i> | <i>Loans and discounts</i> | <i>Individual deposits</i> |
|---------------------|----------------------------|----------------------------|
| 1913                |                            |                            |
| October 21 .....    | 6,260,877,853              | 6,051,689,087              |
| August 9 .....      | 6,168,555,525              | 5,761,338,731              |
| June 4 .....        | 6,143,028,132              | 5,953,461,551              |
| April 4 .....       | 6,178,096,379              | 5,968,787,045              |
| February 4 .....    | 6,125,029,165              | 5,985,432,295              |
| 1912                |                            |                            |
| November 6 .....    | 6,058,982,029              | 5,944,561,069              |
| September 4 .....   | 6,040,841,270              | 5,891,670,007              |
| June 14 .....       | 5,953,904,431              | 5,825,461,163              |
| April 18 .....      | 5,882,166,597              | 5,712,051,088              |
| February 20 .....   | 5,810,433,940              | 5,630,559,231              |

\* From *New York Evening Post*, December 31, 1920, p. 4F.

creases even more rapidly because not only of a greater number of transactions but because of increasing prices per unit.

Experience has taught that in periods such as this, a large volume of credit is unwisely extended and an era of speculation and inflation results. This is reflected in the bank statements which show a low proportion of reserve to loans, and large increases in loans and currency outstanding. The banks, however, have not unlimited lending power and as they begin to approach the limit of their loan expansion, a policy of credit curtailment is necessary. At this time in the business cycle, previous to the Federal Reserve system, panic developed. Credit curtailment came with disastrous rapidity. Even with the reserve banks, curtailment became necessary early in 1920, as a reserve ratio of 42.2 per cent indicated.

Increased activity in business is possible only when credit conditions permit. Times of prosperity come to a rapid termination when credit is no longer freely obtainable; and the ease with which credit is obtainable after a period of depression facilitates greatly the ensuing recovery.

#### INTEREST RATES

**The difference in interest rates.**—Interest rates vary widely according to time, location, and the nature of the loan. For barometric purposes, three are of major importance: (1) the discount rate on ninety-day commercial

paper at the Federal Reserve Bank of New York; (2) the market rate of interest on prime double-name commercial paper in New York City; and (3) the interest rate on call loans on the New York Stock Exchange. Each of these rates is of particular significance.

The current rate of interest is always determined by the supply of loanable funds, i.e., by the existing credit availability. If the supply exceeds the demand at the current rate, the rate will fall; and if the demand exceeds, the rate will advance. It is fairly obvious that the trend of interest will be upward in a period of activity and downward in the succeeding period of inactivity. But more specific inquiry is necessary.

**The Federal Reserve discount rate.**—Although it has yet to assume its rightful position, the discount rate set at the reserve banks and charged by the reserve banks to member banks who desire to rediscount loans, will eventually control all interest rates in this country in the same manner that the discount rate at the Bank of England dominates interest rates in Great Britain. In London, the discount rate is kept above the market rate of interest; any change in the discount rate is promptly followed by a corresponding change in the market rate. Because of war exigencies which existed from the beginning of the reserve system, a similar policy has been impossible in this country up to the present time.

The discount rate at the reserve banks was a factor of no small importance in causing the change in the trend of business conditions in 1920. The mere announcement that an increase in the discount rate—which was then under 5 per cent—was imminent, caused a small panic on the stock exchanges in the late fall of 1919. The subsequent increase in the rate on commercial loans at New York to 6 per cent in January, 1920, and to 7 per cent in June, 1920, coupled with an arbitrary restriction against loans for non-essential purposes, abruptly—too much so it proved—checked credit expansion.<sup>14</sup> The discount rate remained 7 per cent until May 4, 1921, when it was reduced to 6½ per cent. On June 15, 1921, it was further reduced to 6 per cent. The re-

<sup>14</sup> "I believe firmly that the Board by its powers to regulate and increase or reduce the supplies of funds and the interest charges for money could have saved us from a fall so precipitate and smashing.—Ex-Comptroller J. S. Williams in *The Commercial and Financial Chronicle*, vol. 112, No. 2914, p. 1814. Mr. Williams was a member of the Board at the time in point.



TABLE No. 81.—DISCOUNT RATES ON COMMERCIAL LOANS AT FEDERAL RESERVE BANK OF NEW YORK  
AND BANK OF ENGLAND, 1911-1920\*

(Figures for week ending nearest first of month)

| Month          | 1911 | 1912 | 1913 | 1914       | 1915       | 1916       | 1917       | 1918       | 1919       | 1920       |
|----------------|------|------|------|------------|------------|------------|------------|------------|------------|------------|
|                | Eng. | Eng. | Eng. | N. Y. Eng. | N. Y. Eng. | N. Y. Eng. | N. Y. Eng. | N. Y. Eng. | N. Y. Eng. | N. Y. Eng. |
| January.....   | 4½   | 4    | 5    | ..         | 5          | 4          | 5          | 4½         | 4½         | 4½         |
| February.....  | 4    | 4    | 5    | ..         | 3          | 5          | 4          | 4½         | 4½         | 4½         |
| March.....     | 3    | 3½   | 5    | ..         | 3          | 5          | 4          | 4½         | 4½         | 4½         |
| April.....     | 3    | 3½   | 5    | ..         | 3          | 4          | 5          | 4½         | 4½         | 4½         |
| May.....       | 3    | 3½   | 4½   | ..         | 3          | 4          | 5          | 4½         | 4½         | 4½         |
| June.....      | 3    | 3    | 4½   | ..         | 3          | 4          | 5          | 4½         | 4½         | 4½         |
| July.....      | 3    | 3    | 4½   | ..         | 3          | 4          | 5          | 4½         | 4½         | 4½         |
| August.....    | 3    | 3    | 4½   | ..         | 4          | 4          | 5          | 4½         | 4½         | 4½         |
| September..... | 3    | 4    | 4½   | ..         | 5          | 4          | 5          | 4½         | 4½         | 4½         |
| October.....   | 4    | 4    | 5    | ..         | 5          | 4          | 5          | 4½         | 4½         | 4½         |
| November.....  | 4    | 5    | 5    | ..         | 5          | 4          | 5          | 4½         | 4½         | 4½         |
| December.....  | 4    | 5    | 5    | 6          | 5          | 4          | 5          | 4½         | 4½         | 4½         |

\* From "Prentice-Hall Business Information Service."

ductions in 1921 indicated that money conditions were much easier, but even 6 per cent is much too high for a basic rate. As is shown in Table No. 81, the pre-war discount rate at the Bank of England averaged less than 5 per cent.

The market rate of interest.—To the business man, the Federal Reserve discount rate has been of academic interest only. It applies only to transactions between the member banks and the reserve banks. And until such time as the

TABLE No. 82.—INTEREST RATES ON 60-90 DAY CHOICE DOUBLE-NAME COMMERCIAL PAPER, 1911-1920\*

(Average monthly rates in New York City.)

|                | †Indices | 1920 | 1919 | 1918 | 1917 | 1916 | 1915 | 1914 | 1913 | 1912 | 1911 |
|----------------|----------|------|------|------|------|------|------|------|------|------|------|
| January .....  | 98.9     | 6.0  | 5.2  | 5.6  | 3.6  | 3.1  | 3.8  | 4.5  | 4.9  | 3.9  | 4.0  |
| February ..... | 92.6     | 6.4  | 5.2  | 5.7  | 4.1  | 3.1  | 3.8  | 3.8  | 4.9  | 3.8  | 4.1  |
| March .....    | 96.4     | 6.7  | 5.4  | 5.9  | 4.1  | 3.1  | 3.4  | 3.9  | 5.8  | 4.2  | 3.9  |
| April .....    | 94.8     | 6.8  | 5.4  | 5.9  | 4.3  | 3.1  | 3.7  | 3.7  | 5.5  | 4.2  | 3.7  |
| May .....      | 91.8     | 7.2  | 5.4  | 5.9  | 4.8  | 3.1  | 3.7  | 3.9  | 5.4  | 4.2  | 3.6  |
| June .....     | 89.2     | 7.7  | 5.5  | 5.9  | 5.0  | 3.6  | 3.7  | 3.8  | 5.9  | 4.0  | 3.7  |
| July .....     | 94.0     | 7.8  | 5.4  | 5.9  | 4.7  | 4.0  | 3.3  | 4.4  | 6.1  | 4.5  | 3.8  |
| August .....   | 101.7    | 8.0  | 5.4  | 5.9  | 4.8  | 3.7  | 3.5  | 6.3  | 6.0  | 5.0  | 4.2  |
| September .... | 109.2    | 8.0  | 5.4  | 6.0  | 5.2  | 3.4  | 3.3  | 6.7  | 5.8  | 5.6  | 4.5  |
| October .....  | 110.5    | 8.0  | 5.4  | 6.0  | 5.4  | 3.4  | 3.2  | 6.4  | 5.7  | 5.9  | 4.4  |
| November ....  | 109.9    | 7.9  | 5.5  | 6.0  | 5.5  | 3.5  | 3.0  | 5.5  | 5.6  | 5.7  | 3.9  |
| December ....  | 111.0    | 7.88 | 5.9  | 5.9  | 5.5  | 3.9  | 3.1  | 4.4  | 5.7  | 6.0  | 4.6  |

\* From *Standard Daily Trade Service*, May 18, 1921, p. 175.

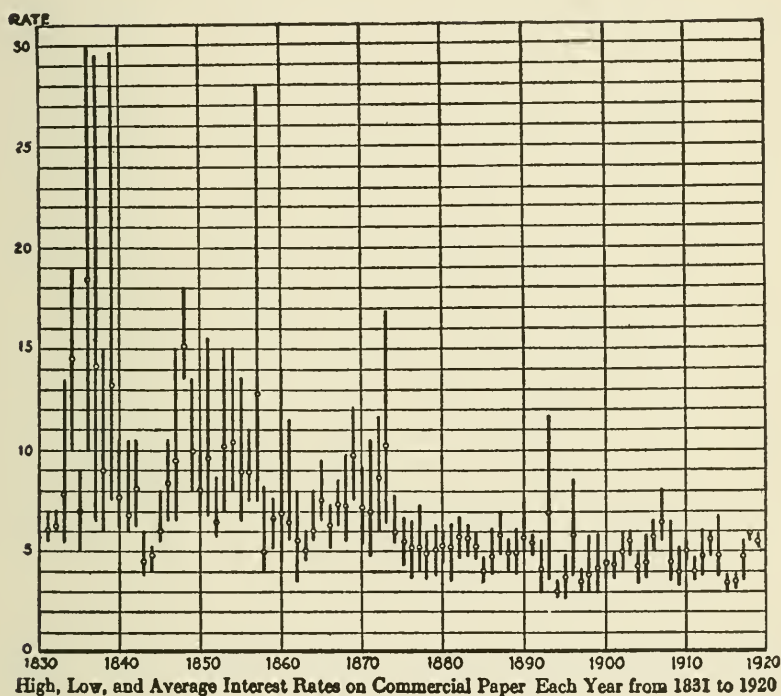
† Of seasonal variation determined by the median of ratios of monthly value to twelve months moving average centered for the years 1901-1913, inclusive.

discount rate influences the market rate, rather than vice versa, as has thus far been the case, the discount rate will remain of secondary interest.

The market rate of interest plays an important part in commerce. A substantial volume of business is impossible without the use of credit. If the charge for credit exceeds the expected profit, the money will not be borrowed, nor incidentally will the business be consummated. Low interest rates encourage business activity, and high interest rates act as a deterrent. As is shown in Table No. 82, the low interest rates which prevailed throughout 1915 were as great a stimulus to business as the high rates in effect in 1920 were a handicap.

Call money rates.—The interest rate on call loans reflects from day to day the amount of surplus funds available in the

CHART XXXIV.—COMMERCIAL PAPER INTEREST RATES: 1831-1920.\*



\* From *Bulletin of Federal Reserve Bank of New York*.

TABLE No. 83.—INTEREST RATES ON CALL LOANS ON NEW YORK STOCK EXCHANGE, 1911-1920\*

(High and low rates for week ending nearest first of month)

| Month       | 1911 | 1912 | 1913 | 1914 | 1915 | 1916 | 1917 | 1918 | 1919 | 1920 |
|-------------|------|------|------|------|------|------|------|------|------|------|
| January.... | 2½   | 3    | 2½   | 2    | 2½   | 1½   | 2½   | 4½   | 5    | 6    |
| February..  | 1½   | 1½   | 2½   | 1½   | 1½   | 1½   | 1½   | 3½   | 3½   | 7    |
| March....   | 1    | 2    | 2½   | 1½   | 2    | 1½   | 2½   | 3    | 5    | 15   |
| April.....  | 2    | 2½   | 2½   | 1½   | 2    | 1½   | 2    | 5    | 4    | 8    |
| May.....    | 2    | 2½   | 2    | 1½   | 2    | 2    | 2½   | 3½   | 4½   | 12   |
| June.....   | 2    | 2½   | 2    | 1½   | 2    | 2½   | 2½   | 4½   | 4½   | 7    |
| July.....   | 2½   | 2½   | 1½   | 1½   | 2    | 2½   | 2    | 3    | 4½   | 15   |
| August....  | 2    | 2½   | 2    | ..   | 1½   | 2    | 1½   | 4    | 5    | 10   |
| September.  | 2    | 2½   | 2½   | 6    | 1½   | 2½   | 2½   | 6    | 5    | 6    |
| October.... | 2    | 3    | 2½   | 6    | 2    | 2    | 2½   | 6    | 6    | 9    |
| November.   | 2    | 4½   | 10   | 5½   | 2    | 2    | 4    | 4    | 4½   | 8    |
| December.   | 2½   | 3    | 2½   | 3½   | 1½   | 4    | 2½   | 5    | 6    | 7    |

\* From "Prentice-Hall Business Information Service."

banks.<sup>15</sup> The rate is subject to change each day, and the renewal rate for the new day is not necessarily the same as for the day before. At times, the renewal rate has been many per cent higher, and at other times lower than the rate for the preceding day. As is shown in Table No. 83, the call loan rate fluctuates widely. It has been as low as 1 per cent (March, 1911) and as high as 25 per cent (January, 1920).

The call loan rate is of chief significance to traders on the speculative markets who are accustomed to operate on a margin seldom exceeding 10 per cent. The call rate, however, is of significance to the entire business world as the trend of interest rates expresses itself first at this point.

Interest rates as a barometer of business.—Interest rates are closely allied to bank statements as barometers of business inasmuch as both are indicia of the condition of the money market. Bank statements are the more valuable of the two, however, as changes in interest rates may always be foreseen from the relative condition of the banks.

An increasing market rate of interest indicates a period of business activity. When the rate reaches and exceeds 6 per cent, the end of the extreme activity is not far distant, as experience has shown that the average business house cannot profitably borrow at rates above 6 per cent for any prolonged period. Decreasing interest rates indicate dullness in commerce, and very low rates signify recovery in the near future.

#### GOLD MOVEMENTS

The normal flow of gold.—Gold, as the only international money, is transferred from one nation to another in normal times in payment of adverse trade balances. The value of the total debits, including "visible" items such as merchandise shipments and "invisible" items such as interest payments, of one nation against another is compared with the value of the total credits, comprising similar items, and the balance is said to be favorable to the country which has an excess of credits and unfavorable to the nation which has an excess of debits. The balance is then adjusted through a gold shipment from the latter to the former.

<sup>15</sup> A call loan is one payable on demand for \$5,000 or more, secured by negotiable collateral. Its use is practically confined to the stock exchanges.



TABLE No. 84.—BALANCE OF GOLD MOVEMENTS TO AND FROM THE UNITED STATES, 1890-1920\*

| <i>Year ended<br/>June 30</i> | <i>Excess of</i>            |                             |
|-------------------------------|-----------------------------|-----------------------------|
|                               | <i>Exports over imports</i> | <i>Imports over exports</i> |
| 1890.....                     | \$4,331,149                 | .....                       |
| 1891.....                     | 68,130,087                  | .....                       |
| 1892.....                     | 495,873                     | .....                       |
| 1893.....                     | 87,506,463                  | .....                       |
| 1894.....                     | 4,528,942                   | .....                       |
| 1895.....                     | 30,083,721                  | .....                       |
| 1896.....                     | 78,884,882                  | .....                       |
| 1897.....                     | .....                       | \$44,653,200                |
| 1898.....                     | .....                       | 104,985,283                 |
| 1899.....                     | .....                       | 51,432,517                  |
| 1900.....                     | 3,693,575                   | .....                       |
| 1901.....                     | .....                       | 12,866,010                  |
| 1902.....                     | .....                       | 3,452,304                   |
| 1903.....                     | 2,108,568                   | .....                       |
| 1904.....                     | .....                       | 17,595,382                  |
| 1905.....                     | 38,945,063                  | .....                       |
| 1906.....                     | .....                       | 57,648,139                  |
| 1907.....                     | .....                       | 63,111,073                  |
| 1908.....                     | .....                       | 75,904,397                  |
| 1909.....                     | 47,527,829                  | .....                       |
| 1910.....                     | 75,223,310                  | .....                       |
| 1911.....                     | .....                       | 51,097,360                  |
| 1912.....                     | 8,391,848                   | .....                       |
| 1913.....                     | 8,568,597                   | .....                       |
| 1914.....                     | 45,499,870                  | .....                       |
| 1915.....                     | .....                       | 25,344,607                  |
| 1916.....                     | .....                       | 403,759,753                 |
| 1917.....                     | .....                       | 685,254,801                 |
| 1918.....                     | 66,438,741                  | .....                       |
| <i>Dec. 31</i>                |                             |                             |
| 1918 (6 mos.).....            | 7,648,323                   | .....                       |
| 1919.....                     | 291,651,202                 | .....                       |
| 1920.....                     | .....                       | 106,612,298                 |

\* "Statistical Abstract of the United States," 1919, p. 522.

Prior to the outbreak of the World War in 1914, no regularity existed in the movement of gold in and out of the United States as is shown in Table No. 84. The aggregate exports and imports during the period from 1890 to 1914 show no large difference. Nor does the table show any tendency for gold exports to increase during years of prosperity—a result which normally might be expected by reason of relative high

prices for domestic goods at such times. The crisis which has often followed such periods of prosperity cannot therefore be attributed to credit contraction caused by loss of gold abroad.

**Gold movements since 1914.**—As a result of the World War, the international movement of gold has had a profound effect upon business conditions in the United States. In the period which began on August 1, 1914, and ended on May 10, 1921, this country gained as a result of the excess of gold imports over exports the sum of \$1,141,964,000.<sup>16</sup> When it is remembered, as has been explained, that under present banking laws, a dollar in gold serves as the basis for nearly \$30 in credit, the potential expansion in the American credit structure of this enormous increase becomes immediately apparent. Herein is found the principal reason for the credit inflation which developed during the war.

TABLE No. 85.—NATIONS HOLDING LARGEST GOLD STOCKS IN 1919\*  
(at end of year)

| <i>Rank</i> | <i>Nation</i>       | <i>Amount</i>    |
|-------------|---------------------|------------------|
| 1.....      | United States ..... | \$2,708,862,000† |
| 2.....      | Great Britain ..... | 777,872,000      |
| 3.....      | France .....        | 694,839,000      |
| 4.....      | Japan .....         | 527,801,000      |
| 5.....      | Spain .....         | 466,800,000      |
| 6.....      | Argentina .....     | 299,119,000      |
| 7.....      | Germany .....       | 259,519,000      |
| 8.....      | Netherlands .....   | 256,204,000      |
| 9.....      | Russia .....        | 232,107,000      |
| 10.....     | Australia .....     | 221,519,000      |
| 11.....     | Denmark .....       | 187,380,000      |
| 12.....     | Italy .....         | 171,276,000      |
| 13.....     | British India ..... | 114,266,000      |
| 14.....     | Switzerland .....   | 87,451,000       |
| 15.....     | Sweden .....        | 75,350,000       |

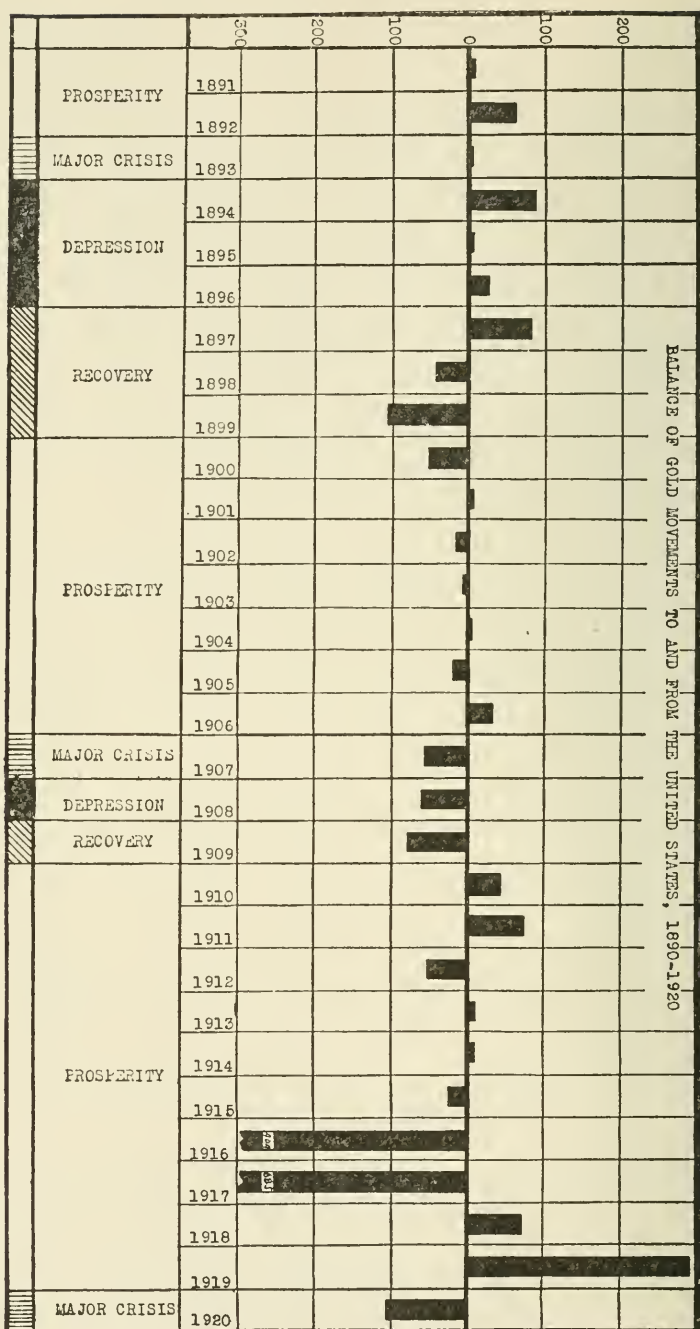
\* "Report of the Comptroller of the Currency," 1920, p. 24.

† On June 1, 1921, the gold stock in the United States was \$3,175,000,000.

**The situation in the United States in 1921.**—As this chapter is being written, gold is flowing into the United States in vast quantities. Between January 1 and May 10, the gain has exceeded \$260,000,000. Of course, it can not long continue at this rate, even were the inward flow entirely

<sup>16</sup> "Federal Reserve Bulletin," vol. 7, No. 6, p. 186.

CHART XXXV.—BALANCE OF GOLD MOVEMENTS OF THE UNITED STATES: 1890-1920.



desirable. The total gold money stock of the world is less than \$8,000,000,000 of which this country possesses about 40 per cent. No other individual nation even approaches the United States in the volume of gold holdings, as is shown in Table No. 85.

Gold entering the United States serves one of two purposes: either it may be used as a basis for credit granting, or it may be utilized to strengthen the reserves against the credit already outstanding.<sup>17</sup> Which will prove the case depends entirely upon the policy adopted by the Federal Reserve Board. Thus far, the credit restrictions imposed in 1920 are being lifted most gradually. Accordingly the gold which has been received during the past year has served the second function, that of strengthening cash reserves. The gain in the reserve ratio from 42.2 per cent on May 14, 1920, to 56.8 per cent on June 15, 1921, is attributable chiefly to this policy on the part of the reserve banks.

**New gold production.**—To a nation which has received about three-quarters of the total gold production of the world during the preceding year in the first four months of 1921, the quantity of current production creates little interest. Yet it should be remembered that the gold which is being received in this country is the new gold which is being produced in the most part. In other words, the gain in the gold holdings of the United States has not been at the expense of the gold stocks of the other nations of the world. The new gold production of the Transvaal—the most productive gold mines in the world—is sold at auction in London and the United States has been able to secure most of it by reason of the premium on the dollar in that market. Apparently the gold influx into the United States will continue until such time as it is stopped by this country.

Production of new gold declined materially during the war. Inasmuch as gold has no price but is price, gold producers were confronted with the greatly increased operating expenses and a stationary revenue. The total production which amounted to \$455,239,000 in 1910 was curtailed to \$339,400,000 in 1920.<sup>18</sup> The decrease in gold production is

<sup>17</sup> Under an arrangement made by the Treasury Department, all gold imports are delivered to the Federal Reserve banks.

<sup>18</sup> *The Journal of Commerce* (N. Y.), February 7, 1921.

TABLE No. 86.—RAND (SOUTH AFRICA) GOLD PRODUCTION, 1911-1920\*

| <i>Month</i> | <i>1911</i> | <i>1912</i> | <i>1913</i> | <i>1914</i> | <i>1915</i> | <i>1916</i> | <i>1917</i> | <i>1918</i> | <i>1919</i> | <i>1920</i> |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| January..... | 651,027     | 737,060     | 789,390     | 651,753     | 714,984     | 787,467     | 782,634     | 714,182     | 676,059     | 670,503     |
| February.... | 610,828     | 703,866     | 734,122     | 626,261     | 676,221     | 753,594     | 721,321     | 659,759     | 636,728     | 625,330     |
| March.....   | 676,065     | 830,723     | 790,552     | 686,801     | 753,935     | 796,689     | 787,094     | 696,281     | 712,379     | 707,036     |
| 1st quarter  | 1,937,920   | 2,271,649   | 2,314,064   | 1,964,815   | 2,145,140   | 2,337,750   | 2,291,049   | 2,070,222   | 2,025,166   | 2,002,869   |
| April.....   | 667,714     | 737,660     | 784,974     | 683,877     | 744,080     | 754,672     | 742,778     | 717,099     | 694,944     | 687,000     |
| May.....     | 685,951     | 779,662     | 794,306     | 720,299     | 763,548     | 777,681     | 779,385     | 741,317     | 724,995     | 699,041     |
| June.....    | 684,567     | 753,936     | 747,077     | 717,926     | 755,280     | 761,764     | 759,724     | 727,696     | 702,379     | 715,957     |
| 2d quarter   | 2,038,232   | 2,271,258   | 2,326,357   | 2,122,032   | 2,262,908   | 2,294,117   | 2,281,887   | 2,186,112   | 2,122,318   | 2,101,998   |
| July.....    | 709,258     | 766,338     | 655,389     | 732,485     | 770,355     | 761,087     | 757,890     | 736,199     | 725,497     | 736,099     |
| August.....  | 713,407     | 764,737     | 728,096     | 713,079     | 778,763     | 781,150     | 756,658     | 740,210     | 706,669     | 702,083     |
| September... | 700,625     | 747,893     | 706,186     | 702,170     | 776,750     | 771,567     | 738,231     | 708,206     | 698,558     | 682,173     |
| 3d quarter   | 2,123,290   | 2,278,968   | 2,089,671   | 2,147,734   | 2,325,868   | 2,313,804   | 2,252,779   | 2,184,615   | 2,130,724   | 2,120,355   |
| October..... | 708,664     | 768,681     | 718,431     | 733,746     | 797,631     | 792,339     | 751,290     | 679,764     | 723,722     | 662,472     |
| November...  | 719,729     | 757,337     | 673,486     | 715,836     | 781,013     | 783,066     | 722,839     | 658,701     | 677,970     | 633,737     |
| December...  | 709,908     | 776,406     | 672,815     | 695,137     | 781,111     | 774,462     | 722,419     | 641,245     | 650,191     | 632,275     |
| 4th quarter  | 2,138,301   | 2,302,424   | 2,064,732   | 2,144,719   | 2,359,755   | 2,349,867   | 2,196,548   | 1,979,710   | 2,051,883   | 1,928,484   |
| Year.....    | 8,237,743   | 9,124,299   | 8,794,824   | 8,379,300   | 9,093,671   | 9,295,538   | 9,022,263   | 8,420,659   | 8,330,091   | 8,153,706   |

\* As reported in "Prentice-Hall Business Information Service."



unfortunate as it makes even more difficult the restoration of the depreciated currencies of Europe.

**Gold movements as a business barometer.**—Gold movements have lost most of their former significance as a barometer of business. Exports embargoes on gold shipments, except by special arrangement, in most of the leading nations prevent the normal flow of gold in payment of merchandise obligations. From the standpoint of the United States, the chief significance is the effect of the gold imports and exports upon the credit situation. As long as the present policy of the reserve banks obtains—that of using imports to strengthen reserves, a repetition of the war inflation of credit is impossible.

#### FISCAL OPERATIONS OF THE TREASURY DEPARTMENT

**The relation of Government to business.**—During the World War, the public debt of the United States increased from less than one billion to over twenty-five billion dollars. The annual expenditures of the Government have increased from about one billion to five billion. One item alone, the interest on the public debt, now exceeds the entire expense of conducting the Government before the war.

Federal taxes before the war were extremely light; in fact negligible in comparison with the present. As the problem of the redemption of the public debt is one of taxes and as taxes have become of lively interest in business circles and exert a definite effect upon conditions, the problem deserves careful consideration from a barometric standpoint.

Table No. 87 shows the public debt of the United States as of June 1, 1921, arranged according to the maturity dates of the various items. By June 30, 1922, a total of over \$2,000,000,000 must be met; during the following year an additional four billions; and within the following five years, a further amount of six billions; or, a total of \$12,000,000,000 within the next seven years in addition to the regular expenses of conducting the Government.

**The possibility of tax reduction.**—In contrast to the foregoing is shown Table No. 88 which gives the results of the operations of the Treasury Department for the fiscal period from July 1, 1920, to June 15, 1921—almost a full fiscal year. This table appears daily in many of the leading newspapers and is worthy of careful study as it shows to what extent the Government is "catching up with the game." For

TABLE No. 87.—PUBLIC DEBT OF THE UNITED STATES ON  
JUNE 1, 1921\*  
(Arranged according to maturity)

|                                 |                   |                  |
|---------------------------------|-------------------|------------------|
| Treasury Certificates .....     | 1922 <sup>1</sup> | \$2,831,948,450  |
| Victory Liberty Loan.....       | 1923 <sup>2</sup> | 4,022,116,555    |
| War Savings Securities.....     | 1924 <sup>3</sup> | 704,382,584      |
| Loan of 1925.....               | 1925              | 118,489,900      |
| Third Liberty Loan.....         | 1928              | 3,643,848,200    |
| Consols of 1930.....            | 1930              | 599,724,050      |
| Panama's of 1936.....           | 1936              | 48,954,180       |
| Panama's of 1938.....           | 1938              | 25,947,400       |
| Fourth Liberty Loan.....        | 1938 <sup>4</sup> | 6,357,692,050    |
| Second Liberty Loan.....        | 1942 <sup>5</sup> | 3,317,847,700    |
| First Liberty Loan.....         | 1947 <sup>6</sup> | 1,952,279,350    |
| Panama's of 1961.....           | 1961              | 50,000,000       |
| Non-interest-bearing debt ..... | <sup>7</sup>      | 230,260,212      |
| Miscellaneous .....             | <sup>8</sup>      | 49,250,960       |
| Total gross debt....            |                   | \$23,952,741,592 |
| Balance in Treasury.....        |                   | 244,565,951      |
| Net debt .....                  |                   | \$23,708,175,641 |

<sup>1</sup> Treasury certificates have varying maturities from 1 to 3 years but the great majority are for 12 months or less.

<sup>2</sup> Optional redemption in 1922.

<sup>3</sup> Maturity is 5 years from issue; most were issued in 1918 and 1919.

<sup>4</sup> Optional redemption in 1933.

<sup>5</sup> Optional redemption in 1927.

<sup>6</sup> Optional redemption in 1932.

<sup>7</sup> Chiefly United States currency notes.

<sup>8</sup> Postal Savings and Conversion bonds having varying maturities.

\* Compiled from *The Commercial and Financial Chronicle*, vol. 112, No. 2920, p. 2502.

the period in question, the excess of ordinary receipts over expenditures—it is the amount of just this surplus that determines the rapidity with which the public debt can be reduced—amounted to \$241,320,000. In comparison with the same period for the preceding year—which showed a deficit of \$488,452,000, the showing seems fairly good, but it is far from being so.

Tax rates are so high that they are a cause for continual complaint in business quarters that they act as a positive deterrent. Yet the revenues of the Government are barely sufficient to meet the expenses to say nothing of meeting enormous maturities of the public debt in the next few years. It is inconceivable that tax rates can be reduced, at least for many years. Yet radical reductions in the appropriations for armament, as well as elsewhere in Government expendi-

TABLE No. 88.—DAILY STATEMENT OF THE UNITED STATES TREASURY, JUNE 15, 1921\*

|                                                                  | <i>This month</i> | <i>Corresponding<br/>Month 1920</i> | <i>†Fiscal Year<br/>1921</i> | <i>†Corresponding<br/>Fiscal year 1920</i> |
|------------------------------------------------------------------|-------------------|-------------------------------------|------------------------------|--------------------------------------------|
| Customs .....                                                    | \$12,836,266.80   | \$15,522,733.55                     | \$296,678,025.75             | \$304,123,645.62                           |
| Internal revenue:                                                |                   |                                     |                              |                                            |
| Income and profits tax .....                                     | 63,254,935.88     | 155,135,761.09                      | 2,704,380,621.49             | 3,355,673,976.50                           |
| Miscellaneous .....                                              | 74,441,525.75     | 68,910,806.74                       | 1,349,205,213.18             | 1,400,967,090.60                           |
| Miscellaneous revenue .....                                      | 19,715,720.07     | 24,622,518.96                       | 683,406,288.74               | 587,115,262.15                             |
| Panama Canal tolls, etc. ....                                    | 244,382.98        | 623,335.33                          | 11,738,491.11                | 5,663,961.63                               |
| Total ordinary .....                                             | \$170,492,831.48  | \$264,815,155.67                    | \$5,045,408,640.27           | \$5,653,543,936.50                         |
| Excess of ordinary receipts over<br>ordinary disbursements ..... | 12,718,290.63     | 51,800,592.71                       | 241,320,368.18               | .....                                      |
| Excess of ordinary disbursements<br>over ordinary receipts ..... | .....             | .....                               | .....                        | 488,452,111.33                             |
| Expenditures .....                                               | \$157,744,540.85  | \$213,014,562.96                    | \$4,804,088,272.09           | \$6,141,996,047.83                         |

\* As published in *The New York Times*, June 18, 1921.

† Receipts and disbursements for June reaching Treasury in July included.

tures can work wonders in this direction. The small daily statement of the Treasury Department gives a far better indication of what is being accomplished along these lines than columns of reading matter.

Fiscal operations of the Treasury as a barometer of business.—The chief barometric significance in the daily reports of Treasury operations relates to taxation. Heavy tax rates which presently exist can be reduced only when the Treasury Department is able to build up a substantial surplus in revenues over expenditures. Incidentally, the outlook for lower taxes before 1950 is not favorable, and before 1930 practically impossible.

## CHAPTER XII

### BAROMETRIC SUMMARY

**Business barometers in general.**—In applied meteorology a barometer does not derive its chief utility from the accuracy with which it measures existing weather conditions. A thermometer also measures weather conditions, and with equal accuracy. A barometer, however, measures air pressure, whereas a thermometer indicates the degree of heat.<sup>1</sup> Changes in atmospheric pressure—attributable though they are to relative differences in the degree of heat in neighboring regions—have a greater significance from the standpoint of predetermining future weather conditions than do temperature changes. It is this function of a barometer—as a prognosticating agent—that makes it of greater utility than certain other meteorological instruments that do not contain this function.

A technical error is therefore made in the assumption that all the various ways in which business activity is measured are true commercial barometers. Agricultural production deserves to be called barometer because subsequent economic developments are largely predicated upon this factor. But bank clearings are more analogous to the thermometer than to the barometer since they serve almost solely to measure current activity and give no basis for determining future activity.

In the chapters immediately preceding, each of the various methods which are commonly used for commercial barometric purposes have been separately discussed and it has been shown that all are not of equal importance. The purpose of the present chapter is to epitomize the thought of the foregoing chapters, and to show the interrelationship of the functions of business from a forecasting viewpoint.

**Interrelationship of business forces.**—Business forecasting may be likened to estimating the outcome of a push-ball contest. If the ball is subject to the pushing power of an individ-

<sup>1</sup> "Barometer: An instrument for determining the weight or pressure of the atmosphere, and hence for judging of the probable changes of weather."—"Webster's New International Dictionary."



ual, the direction in which the ball will move and the rapidity attained can be determined by measuring the strength of the individual and noting the direction in which the power is applied. If two persons are endeavoring to move the ball, each in a different direction, the future movement of the ball can be determined by measuring the relative strength of the two individuals. If three or more persons endeavor to move the ball simultaneously, the problem of predetermining the movement of the ball can be solved through the same mathematical process of measuring the opposing forces.

The trend of business conditions may be assumed to be the push-ball, and all the various factors which influence business conditions to be the players in the contest. The problem is unchanged; the method of attack similar. If it were possible accurately to measure the various forces which influence business conditions, it would be likewise possible to foretell correctly changes in the conditions. From a practical standpoint, the great difficulty lies in the proper measurement of the influencing factors.<sup>2</sup>

Few, if any, economic developments are without effect, large or small, upon all forms of commercial activity. A slight change in the railroad freight rate on raw cotton shipments between two neighboring towns in Texas has been known to affect the price of raw cotton in Liverpool.<sup>3</sup> Because the term implies the mental capacity correctly to ascertain and properly to weigh the innumerable forces which are constantly affecting business conditions, accurate commercial forecasting must always remain a relative concept. An intellect with the power to secure a comprehensive grasp on all the permutations of commerce is found as rarely as a Galileo, a Newton, or an

<sup>2</sup> The complexity of the problem may be better understood if, in considering the push-ball problem, it is assumed that in a large hall some thirty men have various positions along the walls to which each will endeavor to push the ball. The men have different degrees of strength and aggressiveness and are permitted to use any tactics and may push each other as well as the ball. Where will the ball be at the end of two or three minutes?

<sup>3</sup> One of the most perplexing problems in astronomy—that of bringing into line with modern theory a whole series of eclipses of two thousand years ago—has apparently been solved through the assumption that the length of the day is increasing at the rate of *one two-hundredth of a second every century*. As one of the factors which increase the circumference of the world, the building of skyscrapers in New York is seriously considered to have a definite influence, infinitesimally small though it may be, upon the day's duration.—"Astronomy," A. R. Hinks, p. 134.

Edison. Impossible though it is for any individual to predetermine precisely what economic developments will bring forth, no small measure of success is attainable for those who watch carefully the factors which are most likely to exert the largest influence upon changing conditions.

**The fallibility of commercial barometers.**—An infallible business barometer does not exist. Economics in fact, is an inexact science. Economic laws might more properly be termed economic tendencies. Economic forces do not invariably have the same effect and therefore laws can not be proved with the facility which obtains in the exact sciences, such as mathematics, physics, and chemistry. The most that can be said is that economic forces *tend* to have a certain effect.

When fundamental laws are not invariable in their operation, the difficulty of predetermining the precise effect of a single economic development, or a group of developments, becomes fraught with many difficulties. Although agricultural production has truly been termed the fountain-head of commercial activity, large harvests have not invariably been followed by prosperous days. And so with the other commercial barometers.

No single barometer can be accepted as definitely indicative of coming events. The "shadow which is cast before" must be sought in diverse developments rather than through one factor alone. The range of fallibility is materially lessened when several indicia forecast a similar trend. A simultaneous grouping of large harvests, favorable bank statements, and an improvement in conditions abroad is far more certain to indicate a prospective betterment in business activity than any of the factors individually.

**Business barometers as causes and effects.**—The most difficult phase of business forecasting is the differentiation between economic phenomena on the basis of cause and effect. An increase in prices serves to increase industrial profits and thus causes industrial production to be enlarged. And subsequently the increase in industrial activity causes wages to be increased and hence selling prices to be further advanced. So an increase in prices and in industrial production act both as causes and effects of the other. Obviously, the problem of forecasting cannot be solved through an elementary division of various barometers on a basis of cause and effect.



[illegible]

Read vertically for causes; horizontally for effects.

## LEGEND OF SYMBOLS

**Symbol** *As a cause*

A Direct: chief determinant.

**B** Direct; partial determinant.

C Indirect; chief determinant.

**D** Indirect; partial determin

E Indirect; slight influence.

**Negligible.**

## EXPLANATION

In the vertical columns, the factors are treated as causes; the symbols therefore represent the degree of effect which each factor, in its respective vertical column, has upon each other factor as shown in the horizontal columns. The influence of agricultural productivity upon industry is represented by the symbol "A"; upon construction, by "D," etc. The effect upon agricultural production of industrial productivity is shown by "B"; of building operations (construction), by "F," etc.

by "F," etc.

But despite the constant interplay of cause and effect, certain of the barometers represent causes to a greater degree than effects. An attempt to chart the various business barometers in their relation to each other on the basis of cause and effect is essayed in the accompanying table. Any classification similar to this which embraces 462 distinct variations of cause and effect opens the way to considerable difference of opinion. The chart, however, has been painstakingly prepared and is believed to contain a high degree of accuracy.

**Summary of the barometers of production.**—Agricultural production is the most important single factor which influences business conditions. It supplies the major share of the raw materials used in manufacturing, provides employment for a larger number of people than any other occupation, and definitely affects the earning power of the second largest industry—railroading. Large crops usually create increased business activity, and small crops have the opposite tendency. A favorable forecast on winter wheat production in the April Government crop report indicates business activity during the spring and fall months; and a favorable forecast on the crops in general in the September report foreshadows commercial activity during the fall and winter months.

Industrial productivity has at once its greatest strength and greatest weakness in the facility with which the output is controllable. Quite invariably, in times of rising prices, the enticement of large profits leads manufacturers to lose a proper perspective of the entire situation and to increase industrial production well beyond the point of balance with concurrent conditions of consumption. By a converse psychological operation, activity is unduly curtailed during periods of depression. Statistics of industrial production—pig iron, unfilled steel orders, raw material imports, and others—are of barometric value chiefly in comparison with other indicia, such as agricultural production, wages, earnings, financial conditions at home, and general economic conditions abroad. Industrial production should keep pace with external developments. When it is out of balance, either above or below, reaction is inevitable.

Structural production is treated as a separate phase of industry in barometrics inasmuch as the individual trends substantially differ. The tendency of building operations to diminish as prices rise and to be resumed as prices fall is of particular barometric interest. The utility of this barometer, however,



is considerably reduced from a practical standpoint by reason of the inadequacy of the statistics available.

**Summary of the barometers of marketing.**—The all-importance of the element of price in modern business makes changes in price levels of major significance in barometric work. No other factor more truly reflects the trend in business activity. Prices rise during periods of activity, and decline when business is dull. Just as the abnormally high levels attained during times of prosperity help to accomplish the reaction which ensues, just so do the abnormally low levels reached during periods of depression aid in the later recovery. The usual sequence with which prices change offers a forecasting medium of special value. Prices change earliest in raw materials, particularly those which have an active market on the commodity exchanges, such as cotton, wheat, coffee, sugar, and copper. A change in the trend of prices on these commodities forecasts a subsequent change in semi-finished and finished products, and wholesale prices generally. Retail prices follow wholesale prices, and wages of labor are last to be affected.

The volume of commodity shipments serves as a satisfactory index of current activity. Its barometric value is quite limited, however, because it follows the trend of agricultural and industrial production. Changes in the volume of car loadings and idle cars do not indicate subsequent changes in productivity; rather does a change in productivity forecast changes in conditions of transportation.

Foreign trade statistics must be carefully interpreted to be of barometric utility. Due to the effect of price changes the value of the trade is of much less importance than the volume. The total of exports, under present conditions, is of less significance than the total of imports. The dependence of American industry upon foreign buyers has been overemphasized as the value of manufactured products exported averages materially less than 10 per cent annually of the total value of domestic production. European imports have a particular value as a criterion of the degree of economic recovery in that continent.

Retail sales have little barometric value. They are about the last to be affected by changing conditions. A general improvement or retrogression through almost the entire field is necessary before reflection may be noted in retail sales.

**Summary of the barometers of labor conditions.**—Employment conditions are reflected in the trend of wages and of controversies. Wages almost invariably follow the course of business conditions, increasing in times of activity and lowering in periods of inactivity. Toward the close of a period of prosperity wages tend to increase more rapidly than profits and bring about the controversies which become more frequent at this time—an indication that business activity has about reached its peak. During a period of depression, wages decline even below reasonable minima and thus require an upward adjustment even when conditions are inactive. Slight though such an increase may be, it indicates that the darkest hour has passed and that recovery is not far distant. Under new restrictive legislation, immigration figures have lost a great part of their barometric significance.

**Summary of the barometers of business profits.**—Corporate earnings are without special barometric value. The information obtainable, from a forecasting standpoint, is usually obsolete before it is published; and even then rarely differs from that which preceding conditions indicated in advance.

The number of commercial failures is valuable because it indicates accurately and promptly the trend of business events. A very low number of failures in comparison with preceding periods indicates that business is extremely active, that prices are rising, and that profits are fairly easily secured. But most of all it forecasts the end of the era of prosperity, as the months immediately preceding the transition from a period of activity to one of dullness show commercial failures at their lowest ebb.

New security issues have thus far proved of practically no barometric value. Whatsoever utility may reside in this factor has been lost in the inadequacy of the statistics which have hitherto been available on the subject.

**Summary of the barometers of the exchanges.**—As prices on the stock exchanges represent the consensus of opinion of well-informed men as to the future course of earnings of the large industrial enterprises of the country, the trend of conditions should logically find expression in these prices before elsewhere. In a constant endeavor to discount the future, traders buy or sell securities in accordance with the prospective effect of expected developments. The prices of industrial securities, especially those of companies chiefly interested in raw

materials and producers' goods, offer the best criterion for judging the impending course of events.

Prices on the commodity exchanges reflect an even more scientific study of future probabilities than do those on the stock exchanges. Prices rise or fall in accordance with the relative balance in conditions of supply and demand. Any lack of balance is most quickly appreciated on these exchanges and finds almost immediate expression in current prices. As changes in prices on the commodity exchanges begin a sequence of price changes that travels throughout the business world, the action of the commodity exchanges serves as an important barometer of forthcoming changes in the business weather.

Fluctuations in foreign exchange rates are of chief barometric value as a criterion of economic conditions abroad.

Summary of the barometers of finance.—Bank clearings reflect business which was transacted in the immediate past rather than currently. Changes in price levels between the date of contract and the date of payment, the time involved in manufacture, and the customary terms of credit, all tend to make current bank clearings more representative of business as it was from two to three months ago than as it now is. Moreover, bank clearings, standing alone, are quite without significance as to future tendencies.

Bank statements—especially the weekly statement of condition of the combined Federal Reserve banks—are invaluable as business barometers. They reflect the condition of credit availability in the country—a factor of large significance in view of the absolute dependence of modern business upon an adequacy of credit. A period of increased business activity is possible only when credit conditions are favorable. The increase in activity brings a corresponding increase in the demand for loans, and as the period continues the credit availability at the banks is substantially reduced until such time as curtailment of loans becomes imperative. This development in the business situation is revealed in the weekly bank reports which permit even a casual observer of the reserve ratio to keep in intimate touch with the current condition of credit.

When bank statements were rendered at rare intervals, as was the case prior to the organization of the reserve banks, interest rates afforded the most satisfactory method of judg-

ing the condition of the money market. Under the present practice of weekly representative bank statements, interest rates have become of relatively minor barometric utility. The rates vary as a result of changing conditions of credit, a development which can now be closely observed through the bank statements. Eventually the discount rates set by the Federal Reserve banks will dominate the market commercial rate in the United States in a manner similar to the manner in which the Bank of England discount rate dominates money rates over there; but this desideratum has yet to be reached.

Because of the operation of gold export embargoes in practically all nations of the world except the United States, international movements of gold have entirely lost their prewar significance. Gold no longer flows as a natural resultant of debit balances between countries. The position of this country as the leading creditor nation gives it command of most of the gold stock of the world. New gold which comes into the United States may serve either of two purposes, namely, as a basis for additional credit expansion, or, to strengthen the reserves against credit already outstanding. The alternative chosen is largely dependent upon the policy adopted by the Federal Reserve Board which, at least during the period from June of 1920 to June of 1921, elected to utilize the enormous gold increase to strengthen credit reserves and thereby brought the reserve ratio from slightly over 40 per cent in 1920 to over 60 per cent in 1921.

The fiscal operations of the United States Government have become a barometer of importance inasmuch as they indicate forthcoming taxation policies. Taxation has become an influencing factor upon business conditions. Changes in taxes can be predetermined more readily through observation of the relationship between current Federal revenues and expenditures as it appears in the daily statements of the Treasury Department than through any other single source.

**Barometric ranking.**—The foregoing summary leads to a direct comparison of the forecasting utility of all the various barometers which have been discussed. Such comparison must naturally be made on the practical basis of the information which is actually available irrespective of whatever theoretical barometric superiority may be invested in certain of the barometers concerning which adequate information is not thus

far obtainable. On this basis the different indicia are arbitrarily divided into five classes in the order of their importance.

The first class includes seven barometers, each of definite intrinsic barometric value. As a single group they constitute a simple forecasting unit which embraces all the major factors influencing business conditions.

### GROUP I.

#### A-1. Agricultural production.

- (a) The April report on winter wheat.
- (b) The September general report.

#### A-2. Bank statements.

- (a) The weekly Federal Reserve Report.
  - (1) Reserve ratio.
  - (2) Bills discounted.
  - (3) Notes in circulation.
- (b) The weekly statement of reporting member banks.
  - (1) Loans and discounts.

#### A-3. Railroad net earnings.

#### A-4. Commodity exchange quotations.

Wheat-cotton-corn-copper-wool-hides-rubber.

#### A-5. Industrial production.

- (a) Pig iron.
- (b) Bituminous coal.

#### A-6. Stock exchange quotations.

- (a) Average of ten industrial common stocks.  
United States Steel—General Electric—American Locomotive—Kennecott Copper—American Wool—American Hide and Leather—Allis-Chalmers—United States Rubber—National Lead—International Paper.

#### A-7. Business failures.

### GROUP II.

#### B-1. Prices.

- (a) Department of Labor Wholesale Price Index.

#### B-2. Industrial controversies.

### GROUP III.

#### C-1. Interest rates.

- (a) Commercial rate on prime 90-day two-name paper.
- (b) The call loan rate.
- (c) The discount rate on commercial loans at the Federal Reserve Bank of New York.



## C-2. Gold movements.

- (a) The balance of shipments for the month and calendar year to date.

## C-3. Foreign trade.

- (a) The value of imports from Europe.
- (b) The value of manufactures exported.
- (c) The quantity of raw materials imported.

## C-4. New building operations.

## C-5. Federal finance.

- (a) The relationship between total ordinary revenues and expenditures for the fiscal year to date.

## C-6. Foreign exchange rates.

## GROUP IV.

## D-1. Bank clearings.

## D-2. Commodity shipments.

- (a) Weekly car loadings.
- (b) Weekly idle cars.

## GROUP V.

## E-1. Wages.

## E-2. General corporate earnings.

- (a) Quarterly reports.
- (b) Annual reports.

## E-3. New security issues.

**Composite barometers.**—In view of the large variance in the significance and the relative importance of the different indicia of business conditions, a logical development would be the construction of a single barometer which would show the composite effect of the influencing factors. Obstacles which appear almost unsurmountable are met at the outset, however, and make the task by far the most difficult in commerce.

The first problem lies in the selection of the indicia. In the present volume, the individual barometers are discussed under seven main classes which are divided into twenty-two subdivisions which in turn comprise many smaller classifications. Obviously it would be impracticable to include all of the separate indicia in constructing a composite barometer. On the other hand no consensus of opinion exists as to which should be chosen. The composite barometer which is probably most highly regarded in the United States at the present time

does not include agricultural production as one of the influencing factors!

The second problem is to determine the relative importance of the indicia chosen so that each may receive proper weight. It would be unreasonable to ascribe to the volume of new security issues an importance equivalent to that of business failures. Again uniform opinion is lacking. Bank clearings, for illustration, are generally regarded as having greater significance than is stated in the present volume.

The third problem is to combine factors which have many elements of dissimilarity. Not only are units different—volume, value, and percentages—but also are trends because some precede the major swing, some move with it, and the others follow. In a period of liquidation, bank clearings do not immediately fall off but prices decline. In a composite barometer the effect of the inclusion of bank clearings at such a time would be to neutralize the effect of the decline in prices.

Moreover there are certain indicia which cannot be stated statistically or graphically, and which therefore could not be included in a composite barometer. These include factors such as economic conditions abroad, commercial legislation at home—tariff, taxes, etc.—conditions of employment, and politics.

**The Harvard index of general business conditions.**—In connection with the preceding paragraphs brief mention of two of the leading American composite barometers should be of interest.<sup>4</sup> The Harvard Index of General Business Conditions is really three composite barometers rather than one, the three groups covering speculation, business, and banking. Each of the three groups includes four indicia, which makes a total of twelve separate barometers used in the construction of the index. The twelve are as follows:

Group I.—SPECULATION.

1. Bank clearings of New York City.
2. Average price of industrial stocks.
3. Average price of railroad stocks.
4. Average price of railroad bonds.

<sup>4</sup>“The Index of General Business Conditions” prepared by the Committee on Economic Research at Harvard University, and “*The Annalist* Barometer and Business Index Line.” Other composite barometers include the “Babson Compositplot of American Business Conditions,” prepared by Babson’s Statistical Organization; and “*Brookmire’s Forecaster*,” prepared by The Brookmire Economic Service.

## Group II.—BUSINESS.

1. Bank clearings outside of New York City.
2. *Bradstreet's* Index of Wholesale prices.
3. U. S. Dept. of Labor Index of Wholesale prices.
4. Pig iron production.

## Group III.—BANKING.

1. Interest rate on 60-90 day paper in New York.
2. Interest rate on 4-6 months paper in New York.
3. Loans of New York City Clearing House banks.
4. Deposits of New York City Clearing House banks.

The twelve barometers used may be summarized into six: (1) bank clearings, (2) security prices, (3) wholesale commodity prices, (4) pig iron production, (5) interest rates, and (6) condition of the New York City banks. It is therefore significant to list the important indicia which are not considered: (1) agricultural production, (2) condition of the Federal Reserve system, (3) railroad earnings, (4) business failures, (5) commodity exchange quotations, (6) foreign trade, (7) building operations, (8) commodity shipments, and (9) wages. The writer is reluctant to believe that a satisfactory index of business conditions can be constructed without including at least some, if not all, of the nine indicia which are excluded from the Harvard index.

**"The Annalist" barometer and business index line.**—Inasmuch as the Annalist Barometer includes but four indicia—wholesale prices, pig iron production, bank clearings, and the interest rate on 60-90 day commercial paper—it is open to even greater objection for indicia excluded than the Harvard index. It is accordingly even more difficult to believe that the Annalist Business Index Line satisfactorily reflects the trend of business conditions. In view of the important indicia omitted—and it is significant to note that three out of the four included are primarily effects and not causes—the Annalist Barometer has little scientific foundation.<sup>5</sup>

**New barometers, actual and prospective.**—At no time in the past has greater interest been taken in the subject of intelligent business forecasting than is manifest as the present

<sup>5</sup> "The present index line is frankly empirical and its value as a forecaster of the future is predicated wholly on its success in the past."—*The Annalist*, vol. 17, No. 428, p. 377.

volume is being written. During the first half of 1921 two new barometers have been started, one being the monthly survey of employment conditions by the Department of Labor,<sup>6</sup> and the other the monthly report on new security issues by *The Financial and Commercial Chronicle*.<sup>7</sup> A comprehensive production and trade index is being evolved by the Federal Reserve Bank of New York, which should shortly be available and which should prove of invaluable assistance in barometric work.<sup>8</sup>

But even greater development along barometric lines is necessary if a maximum degree of accuracy is to be attained in business forecasting. An index of actual industrial production is needed to cover weekly and monthly output records of leading manufacturers of semi-finished and finished products. An index of retail prices which would approach in accuracy current indexes of wholesale prices would be serviceable. An index which would show collection conditions throughout the country at least once monthly would provide a criterion by which relative financial stringency could be measured.<sup>9</sup> A comprehensive record of building operations in actual progress throughout the country would be infinitely preferable to the present method of compiling the total value of building permits and contracts awarded in certain sections.<sup>10</sup>

But the greatest of all is the need of a method of accurately forecasting weather conditions beyond a few days in advance. This problem is one in applied meteorology rather than in applied economics, yet its solution will be of the utmost importance to the commercial world. Inability to regulate agri-

<sup>6</sup>Reference has previously been made in Part II, Chapter VIII.—*Monthly Labor Review*, vol. XII, No. 1, p. 143.

<sup>7</sup>Previous reference appears in Part II, Chapter IX.—*The Financial and Commercial Chronicle*, vol. 112, No. 2909, p. 1216.

<sup>8</sup>For previous reference, see Part II, Chapter VI.—*The American Economic Review*, vol. XI, No. 1, p. 70.

<sup>9</sup>"Methods of Developing an Index of Collection Conditions," W. H. Steiner, in *Quarterly Publication of the American Statistical Association*, vol. XVII, No. 132, p. 426.

<sup>10</sup>At the First Federal Conference on Business Conditions Reporting, held at Washington, Feb. 21-22, 1921, Prof. Melvin T. Copeland stated that additional statistics were needed in four groups: production, prices, mercantile trade, and credits. Production statistics should include copper, rubber manufactures, clothing, flour, canned goods, machinery, farm implements, builders' hardware, jewelry, musical instruments, and silk goods. "Our production statistics also should be made available promptly, ordinarily within 10 days

cultural production because of uncertain climatic conditions has an influence greater than that of any other single factor upon the phenomenon of the business cycle.<sup>11</sup>

**Future barometric progress.**—Despite the fact that certain new barometers which are now being developed will prove of undoubted assistance in business forecasting, the time is close at hand when further barometric progress will be restricted to the refinement of the indicia which are already available. In an effort to find new methods of predetermining business conditions, economic research has covered practically the entire field of commercial endeavor and has found barometric utility in almost one hundred indicia of business conditions of which about twenty-five, as taken up in the present volume, are of major significance. It would be unreasonable to expect that further research will disclose many new business barometers, and illogical to devote considerable effort to searching for new indicia while present barometers are but imperfectly understood. The deficiencies in the present barometers are not attributable to inherent faults but to inadequate development.

Moreover little forecasting assistance may be expected from barometers of a freakish nature which, through mechanical design or otherwise, endeavor automatically to unfold the business future. Business conditions are susceptible to the influence of so many factors that it is quite impossible to resolve them all into any contrivance which will automatically foretell future

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of the end of the month to which they apply. If a two-month's interval elapses before the statistics are published, the figures oftentimes are stale for practical use in judging current business conditions." Price statistics should include comparative movements according to commodity groups. Mercantile trade statistics should give monthly reports on sales, purchases, and inventories. Monthly reports should be compiled showing retail and wholesale credit conditions.—*Federal Reserve Bulletin*, vol. 7, No. 3, p. 291.

<sup>11</sup> It is encouraging to note that the Department of Commerce has taken a deep interest in the preparation of business statistics. In view of recent statements by Herbert Hoover, it would not be surprising if the Department should undertake the preparation of statistics which are not now available. In *The Nation's Business* for June, 1921, (p. 12) Mr. Hoover is quoted as follows: "What I mean is that we should have more timely, more regular and more complete information of the current production and consumption and stocks of every great commodity in the United States. I am convinced that we should go even further than this; that we should secure and publish the proportion of the total equipment of more important industries, that is, in current production, together with total proportion of labor complement that is in service; and that in a few commodities it may be well to procure and publish the primary prices."



economic developments. Furthermore, the utility of any barometer depends primarily upon the intelligence with which it is interpreted. No real business man will ever ask or expect a device which will relieve him of the burden of thinking.<sup>12</sup>

<sup>12</sup> Since this chapter was written, the Department of Commerce has begun the publication of a monthly "Survey of Current Business" which is a statistical compilation of the various indexes of production and marketing. The Survey contains many indexes which are not specifically covered in this book because of limited barometric value. The chief objection to the Survey is that it is issued too long after the information has become current. This disadvantage can be remedied by issuing the Survey weekly and having it cumulative for the month.



PART III  
BUSINESS CRISES IN THE UNITED STATES



## CHAPTER XIII

### THE PRINCIPAL AMERICAN CRISES

**Frequency of American business crises.**—The annals of American business from 1800 to 1921 include seven major crises which developed in the following years, namely, (1) 1837, (2) 1857, (3) 1873, (4) 1884, (5) 1893, (6) 1907, and (7) 1920. Minor disturbances occurred in 1814, 1818, 1825, 1829, 1848, 1866, 1903, and 1913. The elapsed time between the major crises was respectively 20, 16, 11, 9, 14, and 13, years. If the minor crises are included the elapsed time was 4, 7, 4, 8, 11, 9, 9, 7, 11, 9, 10, 4, 6, and 7 years. While a greater degree of periodicity is found in the recurrence of the major crises than in the elapsed time between all crises, in neither case have the intervening intervals been sufficiently regular to substantiate a theory of true periodicity. "Seven years of plenty followed by seven years of want" has not been the accurate story of American business.

Alternate periods of prosperity and depression are the results of cumulated change, as has been shown in the earlier description of the business cycle, but an analysis of the various factors which contribute to the change does not warrant the belief that a fixed regularity exists in their operation. Upon two occasions—the outbreak of the Civil War in 1861 and the World War in 1914—developments which ordinarily are not considered in the establishment of a theory of periodicity in business cycles, have thrown commerce entirely out of its accustomed channels, have necessitated radical changes in business methods, and have completely altered the results which would have obtained had the old order remained.

**Changes in the nature of crises.**—In the brief summary of the major crises of the United States which appears in the following pages, a material change in the nature of succeeding crises is noteworthy. Economic conditions were vastly different in the early nineteenth century from those in the early twentieth. Agriculture was then the chief occupation and



engaged the attention of more than 75 per cent of the people. The population was relatively small, being but 17,000,000 in 1840. Facilities of transportation and communication were decidedly poor, as the railroad development did not come until nearly the middle of the century. From a political aspect, the nation was none too strong. The twenty years estimated by Washington as necessary to weld the country together proved a conservative prediction. Federal finances were in deplorable condition until well after 1820. A shortage of monetary metal compelled the issuance of a superabundance of paper currency.<sup>1</sup>

The last half of the nineteenth and the first twenty years of the twentieth century witnessed a striking change. The invention of the steam engine and its application to transportation and to industry and the development of the use of electrical power proved momentous factors in the rising importance of industrial production. Improved facilities in transportation and communication, large scale manufacturing made possible through new machinery and the corporate form of business organization, and a tremendous increase in the use of credit in business, all tended to put the conduct of business on a plane vastly different from that occupied in the early nineteenth century.<sup>2</sup>

With the entire institution of business in the process of material change, the commercial disturbances which meantime arose differed from those which preceded and followed. The earlier crises are attributable to causes such as specie shortage, overexpansion of railroads, and the building of public works; whereas recent disturbances are due more to reasons such as industrial overproduction and credit inflation.

**The earlier crises.**—The economic disturbances which developed in the United States in 1814 and 1818 were chiefly due to the unsatisfactory banking policies in practice. After Congress refused to extend the charter of the First Bank of the United States in 1811—a most unfortunate act as later developments proved—hundreds of State banks entered the field. A vast increase in the volume of outstanding credit resulted through loans and note issues by these new banks, enormously out of proportion to the specie reserves held at the time. In the meanwhile the War of 1812 had begun and was

<sup>1</sup> "Financial History of the United States," D. R. Dewey, p. 76.

<sup>2</sup> "Syllabus of Lectures on Panics and Depressions," W. H. Lough, Jr., p. 3.

TABLE No. 89.—CONDITION OF BANKS IN THE UNITED STATES  
1811-1816\*

| <i>Year</i> | <i>Number of<br/>banks</i> | <i>Capital</i> | <i>Circulation</i> | <i>Specie</i> |
|-------------|----------------------------|----------------|--------------------|---------------|
| 1811.....   | 88                         | \$52,000,000   | \$28,000,000       | \$15,000,000  |
| 1815.....   | 208                        | 82,000,000     | 45,000,000         | 17,000,000    |
| 1816.....   | 246                        | 89,000,000     | 68,000,000         | 19,000,000    |

\* "A Brief History of Panics in the United States," C. Juglar, p. 36.

going none too favorably for the United States, with corresponding adverse effect upon banking confidence. The capture of the city of Washington by the British on August 24, 1814, was followed by a suspension of the Philadelphia and New York banks. The banks remained closed until 1817.

The period of depression which began in 1814 lasted until 1820. Business conditions in 1819 were particularly poor.<sup>3</sup> Even the rectification of the error of 1811—when the charter of the First Bank of the United States was permitted to expire—through the chartering of a Second Bank of the United States in 1816 failed to prove of assistance until well after 1820.

The crisis of 1837.—Business conditions during the period from 1820 to 1837 were in marked contrast to those which existed during the six years immediately preceding. The completion of the Erie Canal in 1825 was the first great step in the opening of the West, and served as a stimulus for similar projects throughout the North and East. Steam railroads were proved practicable by 1830 and extensive construction was in progress within a few years thereafter. The financial position of the Government had improved to such an extent that the entire national debt was redeemed by 1835 and a surplus of \$26,749,803 was on hand on January 1, 1836.<sup>4</sup> With the exception of a small reserve, this surplus was divided among the State governments. Public projects—banking, canals, and railroad construction—were undertaken in the enthusiasm of the moment without conservative regard for productive power

<sup>3</sup> "Distress was severe throughout the country; many laborers were thrown out of employment; prices of exportable articles fell; and, in general, a readjustment of values was forced upon the country. Contraction of credits by the banks in their endeavor to obtain a specie basis in 1817 also contributed to diminish the credit facilities which the banks could afford to importers; the State banks reduced their note issues from \$100,000,000 in 1817 to \$45,000,000 in 1819."—"Financial History of the United States," D. R. Dewey, p. 166.

<sup>4</sup> "History of Modern Banks of Issue," C. A. Conant, p. 626.

in the immediate future. Speculation, especially in land, became rampant.

Factors other than speculation and unproductive projects also contributed to the reaction of 1837. Congress refused to extend the charter of the Second Bank of the United States which expired in 1836. The Coinage Act of 1834 changed the ratio of the relative value of gold and silver under the bimetallic system which then prevailed from the old ratio of 15 to 1—which undervalued gold and hence kept it from circulation, thereby protecting reserves—to a new ratio of

TABLE No. 90.—BANK EXPANSION IN THE UNITED STATES, 1829-1845\*

(amounts in millions of dollars)

| <i>Year</i> | <i>Number of<br/>banks</i> | <i>Capital</i> | <i>Circulation</i> | <i>Loans</i> |
|-------------|----------------------------|----------------|--------------------|--------------|
| 1829.....   | 329                        | 110.2          | 48.2               | 137.0        |
| 1834.....   | 506                        | 200.0          | 94.8               | 324.1        |
| 1835.....   | 704                        | 231.2          | 103.7              | 365.2        |
| 1836.....   | 713                        | 251.9          | 140.3              | 457.5        |
| 1837.....   | 788                        | 290.8          | 149.2              | 525.1        |
| 1838.....   | 829                        | 317.6          | 116.1              | 485.6        |
| 1839.....   | 840                        | 327.1          | 135.2              | 492.3        |
| 1840.....   | 901                        | 358.4          | 107.0              | 462.9        |
| 1841.....   | 784                        | 313.6          | 107.3              | 386.5        |
| 1842.....   | 692                        | 260.2          | 83.7               | 324.0        |
| 1843.....   | 691                        | 228.9          | 58.6               | 254.5        |
| 1844.....   | 696                        | 210.9          | 75.2               | 294.9        |
| 1845.....   | 707                        | 206.0          | 89.6               | 288.6        |

\* "Financial History of the United States," D. R. Dewey, p. 225.

16 to 1—which overvalued gold and hence forced it into circulation and out of the country.<sup>5</sup> In 1836, the Treasury Department refused to accept other than specie in payment for public lands, and thus put a decided check upon speculation in this field. The failure of the agricultural crops in 1835 and 1837 was an additional unfavorable factor.

Public meetings held in New York protesting against high commodity prices early in 1837 indicated that the end of the period of prosperity was close at hand. The crisis came on April 1, 1837, and during the following ten days 128 commer-

<sup>5</sup> In 1834 the ratio on the basis of the relative market value of gold and silver was 15½ to 1. At 15 to 1, gold was undervalued; at 16 to 1, silver was undervalued.

cial failures were reported in New York City. Specie payments were suspended by the banks on May 10 and were not resumed until the following year. The depression in business continued until 1840.

The crisis of 1857.—Liquidation was so thorough during the three years of depression immediately preceding 1840 that the ensuing period of recovery was long sustained. A failure of the principal European crops in 1845, 1846, and 1847 was but a single factor contributing to the general prosperity in this country. The Mexican War in 1847 stimulated commerce through abnormal Federal expenditures in the same manner although to a lesser degree as did the recent World War. The discovery of gold in California in 1849 greatly increased the monetary reserves of the country.<sup>6</sup> Political and economic

TABLE No. 91.—BANKING CONDITIONS IN THE UNITED STATES,  
1846-1860\*

(in millions of dollars)

| <i>Year</i> | <i>Number of<br/>banks</i> | <i>Loans</i> | <i>Deposits</i> | <i>Circulation</i> | <i>Specie<br/>reserve</i> |
|-------------|----------------------------|--------------|-----------------|--------------------|---------------------------|
| 1846.....   | 707                        | 312.1        | 96.9            | 105.6              | 42.0                      |
| 1847.....   | 715                        | 310.3        | 91.8            | 105.5              | 35.1                      |
| 1848.....   | 751                        | 344.5        | 103.2           | 128.5              | 46.4                      |
| 1849.....   | 782                        | 332.3        | 91.2            | 114.7              | 43.6                      |
| 1850.....   | 824                        | 364.2        | 109.6           | 131.4              | 45.4                      |
| 1851.....   | 879                        | 413.7        | 129.0           | 155.2              | 48.7                      |
| 1852.....   | 992                        | 527.0        | 189.0           | 156.3              | 53.0                      |
| 1853.....   | 1,098                      | 408.9        | 145.6           | 146.1              | 47.1                      |
| 1854.....   | 1,208                      | 557.4        | 188.2           | 204.7              | 59.4                      |
| 1855.....   | 1,307                      | 576.1        | 190.4           | 187.0              | 53.9                      |
| 1856.....   | 1,398                      | 634.2        | 212.7           | 195.7              | 59.3                      |
| 1857.....   | 1,416                      | 684.5        | 230.4           | 214.8              | 58.3                      |
| 1858.....   | 1,422                      | 583.2        | 185.9           | 155.2              | 74.4                      |
| 1859.....   | 1,476                      | 657.2        | 259.6           | 193.3              | 104.5                     |
| 1860.....   | 1,562                      | 691.9        | 253.8           | 207.1              | 83.6                      |

\* Compiled from "Financial History of the United States," D. R. Dewey, p. 260, with slight amplifications.

<sup>6</sup> The gold discoveries in California were almost simultaneous with those in Australia. The average annual production of gold in the world from 1492 to 1950 was about \$9,000,000; in the period from 1851 to 1860 the annual average increased to \$133,000,000.—"History of Modern Banks of Issue," C. A. Conant, p. 637.

difficulties in Europe caused an enormous increase in immigration to the United States.<sup>7</sup> Railroad expansion was more rapid than the growth of the country. In the nine years preceding 1857, over 20,000 miles of new railroads were constructed; in the year 1856 alone, 3,642 miles were completed.<sup>8</sup>

As the era of prosperity continued, business activity increased, and prices advanced. A fever of speculation ensued and the demand for bank loans was insatiable. A tightening of the credit market as early as 1854 gave warning of the necessity of the curtailment of credit. The warning passed unheeded, however, and the inevitable crash came in 1857.

TABLE No. 92.—NEW RAILROAD MILEAGE CONSTRUCTED IN THE UNITED STATES, 1840-1900\*

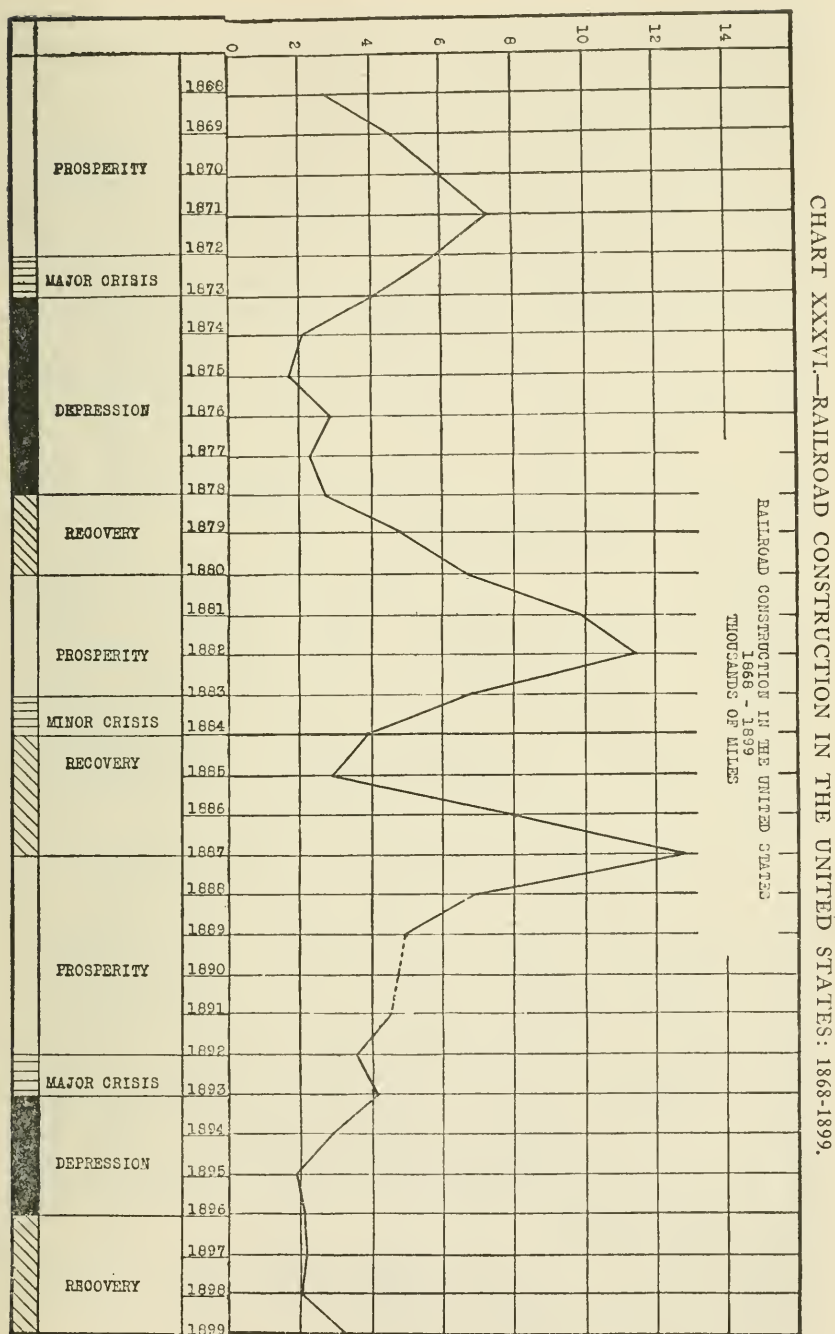
| <i>Year</i> | <i>Mileage<br/>increase</i> | <i>Year</i> | <i>Mileage<br/>increase</i> | <i>Year</i> | <i>Mileage<br/>increase</i> |
|-------------|-----------------------------|-------------|-----------------------------|-------------|-----------------------------|
| 1840.....   | 516                         | 1860.....   | 1,837                       | 1880.....   | 6,711                       |
| 1841.....   | 717                         | 1861.....   | 660                         | 1881.....   | 9,846                       |
| 1842.....   | 491                         | 1862.....   | 834                         | 1882.....   | 11,569                      |
| 1843.....   | 159                         | 1863.....   | 1,050                       | 1883.....   | 6,745                       |
| 1844.....   | 192                         | 1864.....   | 738                         | 1884.....   | 3,923                       |
| 1845.....   | 256                         | 1865.....   | 1,177                       | 1885.....   | 2,975                       |
| 1846.....   | 297                         | 1866.....   | 1,716                       | 1886.....   | 8,018                       |
| 1847.....   | 668                         | 1867.....   | 2,249                       | 1887.....   | 12,876                      |
| 1848.....   | 398                         | 1868.....   | 2,979                       | 1888.....   | 6,900                       |
| 1849.....   | 1,369                       | 1869.....   | 4,615                       | 1889.....   | 5,162                       |
| 1850.....   | 1,656                       | 1870.....   | 6,078                       | 1890.....   | ....                        |
| 1851.....   | 1,961                       | 1871.....   | 7,379                       | 1891.....   | 4,844                       |
| 1852.....   | 1,926                       | 1872.....   | 5,870                       | 1892.....   | 3,656                       |
| 1853.....   | * 2,452                     | 1873.....   | 4,097                       | 1893.....   | 4,143                       |
| 1854.....   | 1,360                       | 1874.....   | 2,117                       | 1894.....   | 2,899                       |
| 1855.....   | 1,654                       | 1875.....   | 1,711                       | 1895.....   | 1,895                       |
| 1856.....   | 3,642                       | 1876.....   | 2,712                       | 1896.....   | 2,053                       |
| 1857.....   | 2,487                       | 1877.....   | 2,274                       | 1897.....   | 2,163                       |
| 1858.....   | 2,465                       | 1878.....   | 2,665                       | 1898.....   | 2,026                       |
| 1859.....   | 1,821                       | 1879.....   | 4,809                       | 1899.....   | 3,466                       |

\* "Statistical Abstract of the United States," 1919, p. 328.

<sup>7</sup> "In 1845, the number of immigrants to this country was 114,000; in 1847, 225,000; and in each of the five years after 1849 it was more than 350,000. More immigrants, in fact, came between 1845 and 1855 than in the preceding twenty-five years.—"Financial History of the United States," D. R. Dewey, p. 257.

<sup>8</sup> "History of Modern Banks of Issue," C. A. Conant, p. 637.







The failure of the Ohio Life Insurance and Trust Co. on August 24, 1857, precipitated a panic. Prices dropped demoralizingly on the New York Stock Exchange, interest rates mounted enormously, specie payments were suspended by the Philadelphia and New York banks, and several large railroad companies went into receivership. As is usually the case when economic crises develop out of financial difficulties, the crisis of 1857 was not long continued. By the end of the year, conditions had regained a large degree of stability.

**The crisis of 1873.**—American commerce passed through tumultuous days between 1857 and 1873. The Civil War which lasted from 1861 to 1865 left many perplexing problems in the form of a tremendous increase in the national debt, and the monetary system of the country on a paper basis. The public energies turned from war to industry with such vigor that even a serious panic in England in 1866 failed to affect adversely American conditions.<sup>9</sup>

Railroad construction in the years following the Civil War was greatly increased. The average new mileage completed during the war was slightly over 1,000; in 1869, it increased to 4,953; in 1870, to 5,690; in 1871, to 7,670; and 1872, to 6,167; or a total of 24,480 miles in four years. The increase in railroad construction naturally brought a corresponding gain in iron production, and in industry generally. Production was overstimulated from the viewpoint of both the actual requirements and the financial capacity of the country.

A marked stringency developed in the money market late in 1872 and continued with increasing emphasis into 1873. A few small bank failures early in September were followed by the failure of Jay Cooke and Company—a private banking house intimately connected with the Treasury Department—on September 18, 1873, and panic ensued. Bank runs compelled many financial institutions to close. Industry was profoundly affected; new railroad construction decreased to 2,117 miles in 1874 and 1,711 in 1875; foundries and mills practically ceased operations. Business prostration continued for six years—one of the darkest periods in the commercial history of the United States.

**The crisis of 1884.**—The economic disturbance of 1884 was of short duration. It is attributable almost entirely to specu-

<sup>9</sup> May 11, 1866—the day following the Overend, Gurney and Co. failure—has long been memorable in British financial history as "Black Friday."

lative causes. European crop failures resulted in a heavy demand upon American agricultural production with the result that the value of merchandise exports in 1881 was nearly \$1,000,000,000. The large favorable trade balance brought a corresponding increase in gold imports which served as a basis for augmented bank loans. Stringency developed rapidly during 1884. The suspension of the Marine Bank in New York on May 5, 1884, was followed by several smaller failures. To meet the currency shortage, local banks and clearing houses formed associations which issued "clearing house certificates" which were acceptable in lieu of cash. The crisis, which was chiefly felt by the stock exchanges, passed rapidly and by the end of the year equilibrium had been re-established.<sup>10</sup>

TABLE No. 93.—THE RATIO OF GOLD TO SILVER ACCORDING TO RELATIVE MARKET VALUES, 1840-1895\*

| <i>Year</i> | <i>Ratio of gold<br/>to silver</i> | <i>Year</i> | <i>Ratio of gold<br/>to silver</i> |
|-------------|------------------------------------|-------------|------------------------------------|
| 1840.....   | 15.61                              | 1875.....   | 16.58                              |
| 1850.....   | 15.70                              | 1876.....   | 17.87                              |
| 1860.....   | 15.29                              | 1877.....   | 17.22                              |
| 1870.....   | 15.57                              | 1878.....   | 17.94                              |
| 1871.....   | 15.57                              | 1879.....   | 18.39                              |
| 1872.....   | 15.63                              | 1880.....   | 18.04                              |
| 1873.....   | 15.92                              | 1885.....   | 19.39                              |
| 1874.....   | 16.17                              | 1890.....   | 19.77                              |
|             |                                    | 1895.....   | 31.57                              |

\* "Financial History of the United States," D. R. Dewey, p. 406.

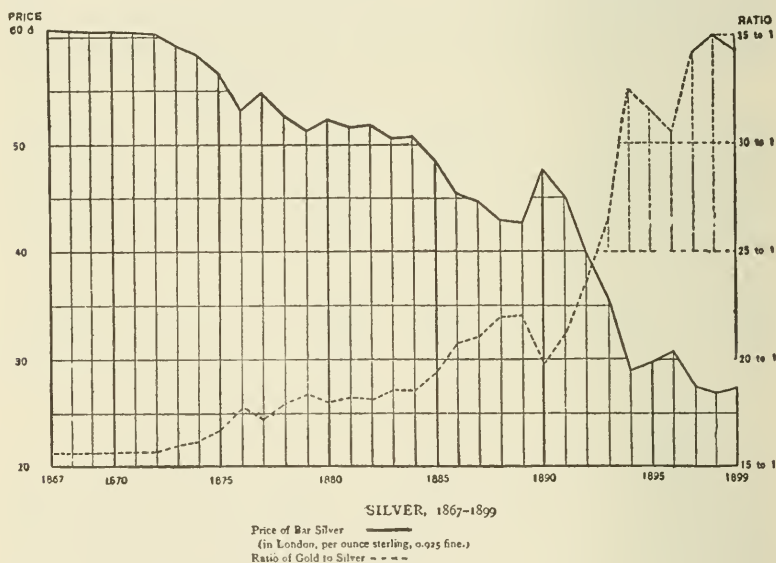
**The crisis of 1893.**—The severe business depression which developed in the United States in 1893 was caused by two outstanding factors. The failure of Baring Brothers and Company in London caused British nationals to regard their foreign investments with large misgivings. Although the investments marketed through the house of Baring had been principally in Argentine, British investors were led to restrict their commitments in other countries, including the United States. Up to this time, English capitalists were content to leave their investments in this country undisturbed and even reinvested the interest payments. As a result of the Baring collapse, however, the English investors began to withdraw

<sup>10</sup> "A Brief History of Panics in the United States," C. Juglar, p. 102.

their commitments which required that large gold shipments be made from this country. Another reason which prompted this action was the bimetallic policy which was being followed by the United States Government.

Under legislation passed in 1873, the United States went on a gold monetary basis. The Bland-Allison Act which was passed in 1878 attempted to restore silver on a bimetallic basis with gold at the ratio of 16 to 1 but with limited success. The silver advocates, disappointed with the results of the Bland-Allison Act, succeeded in passing a more comprehensive measure in 1890 which was known as the Sherman Act. The attempt on the part of the Government to keep silver on a mone-

CHART XXXVII.—RELATIVE GOLD AND SILVER PRICES: 1867-1899.\*



\* From "Financial History of the United States," D. R. Dewey.

tary equality with gold at a ratio far different from the relative market values as shown in Table No. 93, resulted disastrously. Federal gold reserves were rapidly depleted, falling from \$190,000,000 in 1890 to \$80,000,000 in 1893. Public confidence in the monetary situation weakened, and reached its lowest ebb when the British Government closed the mints in India to the free coinage of silver in May of 1893.

The uncertainty in the monetary situation was quickly reflected in banking and industry generally. The failure of the

Chemical National Bank in Chicago on May 9, 1893, precipitated a panic which became country-wide. With credit conditions extremely stringent, industry soon came to a standstill.<sup>11</sup> The repeal of the Sherman Act on October 30, 1893, was a belated attempt to rectify damage which had already been done. Business conditions recovered gradually but it was close to 1896 before the effects of the crisis had definitely terminated.

**The crisis of 1907.**—The crisis of 1907 ended almost as quickly as it began. The cause was purely financial. Banking was still being conducted under legislation passed in 1863 under the emergencies of war times, which made the circulating currency dependent upon the volume of United States bonds outstanding. The banks of the country followed a policy of independence from each other rather than one of interdependence. Under reserve legislation, the surplus funds of the country found their way to New York at all times of the year except at the harvests, when the funds were withdrawn. Consequently each fall found credit conditions decidedly stringent with adverse effect upon business in general.

The credit situation in New York in the fall of 1907 was more difficult to handle than in previous years. This was due to the increase in speculative transactions during the year immediately preceding, and to the prevalence of credit stringency abroad as well as at home. The banks found their cash reserves perilously low and were obliged to curtail loans and to advance interest rates to extremely high points. The Knickerbocker Trust Company failed on October 22, 1907, and this failure was followed by those of other financial institutions. The banks eventually met the situation by issuing clearing-house certificates in various cities. Moreover, the close of the harvest brought a lessened strain upon the banks, and, by the end of the year, the critical phase was passed.

**The crisis of 1920.**—While it is still too early to pass definite judgment upon whether or not the year 1920 will go down in commercial history as one of crisis, the situation was de-

<sup>11</sup> "The production of coal, both anthracite and bituminous, fell off; the output of pig-iron, which had been about 9,157,000 tons in 1892, fell to 6,657,000 tons in 1894; new railway construction almost ceased; in 1894 there were 156 railways, operating a mileage of nearly 39,000 miles, in the hands of receivers; among these were three great railway systems,—the Erie, Northern Pacific, and Union Pacific."—"Financial History of the United States," D. R. Dewey, p. 446.

cidedly critical throughout most of the year. The beginning of the year found practically all commercial indicia registering new high records. Prices, wages, bank loans, bank deposits, foreign trade, commodity shipments, and other barometers of business reflected unprecedented activity. Speculation, encouraged by low interest rates, had increased enormously throughout 1919. The credit situation had stood the strain satisfactorily due to the enormous gain in gold reserves during the early years of the World War.

The Department of Labor index of wholesale prices for January of 1920 was 248 in comparison with 100 for the entire year 1913. The maximum was reached in May,—272. Prices declined rapidly during the last half of the year as is witnessed by the index of 189 for December. The decline in prices was accompanied by a general slackening of business activity which, however, did not reach its lowest point until 1921.

The reserve ratio for the combined reserve banks on January 2, 1920, was 43.7 per cent, or fairly close to the legal minimum. Federal Reserve notes in circulation amounted to \$2,998,992,000 which represented almost wholly currency expansion in the United States during and following the war. The low ratio prompted the banks to take corrective action early in the year. Discount rates were advanced in January; the increase in New York on commercial paper was from  $4\frac{3}{4}$  to 6 per cent. The plan did not prove immediately efficacious, however. The ratio continued to decline and reached 42.2 per cent in May. Note circulation increased constantly. More drastic action was then taken. Discount rates were further advanced; the commercial rate in New York was increased to 7 per cent. Moreover banks adopted a policy of refusing loans for all but essential purposes in order that credit might be conserved for the most beneficial objects. This dual policy was strictly enforced throughout the remainder of the year.

The cause of the reaction in business in 1920 may be found in an analysis of the credit situation. As long as credit was freely obtainable, as was the case throughout the war and up to the beginning of 1920, prices advanced constantly and business was abnormally active. When it became apparent early in 1920 that credit could no longer be indefinitely expanded and that curtailment was necessary, it was seen that reaction was inevitable. Bank loans were no longer available to



finance foreign trade, or to withhold commodities from the market, or for any purpose other than essential production. The upward trend of prices was checked and a descent of unprecedented rapidity ensued. Labor was unwilling to accept corresponding reductions in wages, and industry slackened as a consequence.

The end of the year found conditions extremely quiet. The extreme activity of the beginning of the year had been transformed completely. Through the operation of the Federal Reserve system, the transition had been accomplished without a panic but the practical effects were only less severe than had formerly been the case.





# APPENDIX

## SOURCES OF BAROMETRIC INFORMATION

### DAILY

1. Stock exchange quotations.....*The New York Times*(a)
2. Commodity exchange quotations.....*The New York Times*(a)
3. Foreign exchange quotations.....*The New York Times*(a)
4. Interest rates .....*The New York Times*(a)
5. Federal finance .....*Daily statement of Treasury Department*(b)
6. Industrial controversies .....*The New York Times*(a)

### WEEKLY

7. Bank statements (Friday).....*Weekly statement of Federal Res. Banks*(b)
8. Bank clearings (Saturday)....*The Commercial and Financial Chronicle* (c)
9. Bituminous coal production (Monday),  
*Weekly report of U. S. Geological Survey*(c)
10. Idle cars and car loadings (irregular),  
*Weekly report of the Car Service Division of the Am. Ry. Assn.*(b)

### MONTHLY

11. New security issues (1st).....*The Journal of Commerce* (N. Y.) (c)  
 New security issues (15th)...*The Commercial and Financial Chronicle*(c)
12. Pig iron production (5th).....*Iron Age*(b)
13. Business failures (5th)....."Bradstreet's"; "Dun's Review"(b)
14. Agricultural production (10th),  
*Monthly Crop Reporter* of the U. S. Dept. of Agriculture(b)
15. New building operations (10th)....."Bradstreet's"; F. W. Dodge & Co.(c)
16. Wholesale price index (10th)....."Bradstreet's"(b)  
 Wholesale price index (15th),  
*Monthly Labor Review* of the U. S. Dept. of Labor(b)
17. Gold movements (20th),  
*Monthly Summary of Foreign Commerce of the U. S. Dept. of Commerce*(b)
18. Foreign Trade (20th),  
*Monthly Summary of Foreign Commerce of the U. S. Dept. of Commerce*(b)
19. Wages (15th).....*Monthly Labor Review*(c)
20. Railroad net earnings (30th),  
*Monthly Reports of the Interstate Commerce Commission*(b)
  - (a) Information appears in all important daily newspapers.
  - (b) Original sources; information is reported in leading papers.
  - (c) Original sources; not generally reported in newspapers.



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